COAL AGE

Vol. 4 NEW YORK, DECEMBER 20, 1913 No. 25

Christmas in a Mining Town

By Berton Braley

Written expressly for Coal Age

Christmas in a mining town—dreary sort of time,
Snow is rather dingy and the hills look bare,
Life is just the baldest prose—not a bit of rhyme,
Scarce a sign of Santa, though he should be there;
Children in the miners' homes whisper in the night
"Tell us he is comin', say it ain't no fake!"
Well, sir, will you turn away, hold your money tight?
Or will you loosen slightly for a small child's sake?

Christmas in a mining town—life is pretty hard
Many is the hovel where the cupboard's bare,
Mothers toil unceasingly—this is their reward
To meet the Christmas season with a face of care;
Well, sir, will you turn aside, clutching tight your roll,
Or fill a portly basket as a good sport should?
Charity's a joyous task—soothing to the soul,
Why not try it, brother?—Ah, I thought you would!

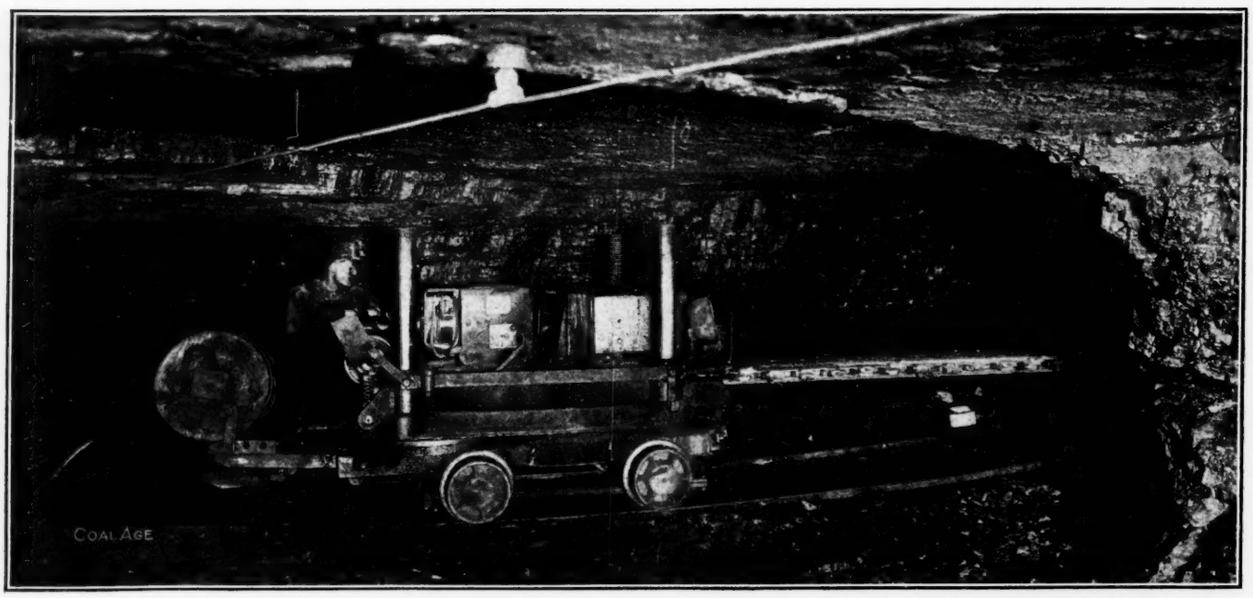
Christmas in a mining town—money's not enough,
Give some love and kindness and a heart of cheer,
Help to smooth the pathway, where the going's rough,
Give your songs and laughter—let them ring out clear!
Brighten up the dreary homes where the lives are gray,
Frolic with the children till they shout with glee,
Christmas in a mining town—make this holiday,
Something like the Christmas that it ought to be!

A New Type of Coal Cutter

By C. E. Warbom*

SYNOPSIS—A machine which cuts a 15-ft. room to a depth of 8 ft. without being unloaded from its truck. Since the cutting is done in a shale parting, which may then be entirely removed, no "bug dust" is made and the coal is secured clean from slate.

A novel and economical type of coal-cutting machine has been recently placed on the market by the Jeffrey Manufacturing Co., Columbus, Ohio. This is known as the Jeffrey-Drennen adjustable-turret coal cutter, and was designed by the Jeffrey company's engineers at the request and with the coöperation of Everett Drennen, manager of the Consolidation Coal Co.'s mines in the Elkhorn Division, to meet certain conditions existing there, also to enable the mining company to economically produce coal and increase the quality thereof.



The Machine Entering a Room

The coal seam at Jenkins, where the mines are located, varies from 6 to 8 ft. in thickness. It is clear, bright and free from sulphur or other impurities with the exception of a band of shale located at a height of from 2 to 5 ft. from the bottom. This varies in thickness from nothing to 19 in.

With the customary methods of undercutting it would be impossible when shooting to prevent this shale from becoming mixed with the coal, but by the use of a machine adapted to cutting out or removing this parting before the coal is shot down this difficulty is overcome.

How the Machine Is Built

The machine is mounted on a turntable truck, which carries four heavy standards or uprights, on which the machine proper is raised or lowered or adjusted to the desired height at which to cut out the dirt seam. The cutter is designed for a minimum height of 2 ft. from the bottom, and can be adjusted to cut at any position between 2 and 5 ft. The raising or lowering of the machine is accomplished by power through a disk friction clutch, which enables the operator to absolutely control the elevation of the machine to a nicety, 3 ft. of a vertical movement being accomplished in about 25 seconds.

A cable reel is provided which automatically reels up or unwinds the cable as a room is entered or left. The machine is arranged for self-propulsion and has a maximum speed of 350 ft. per minute; the rapidity of travel being controlled by the operator through a disk friction clutch, thus enabling him to run at any desired speed from nothing up to the maximum. This is a great advantage in going over frogs and switches since it minimizes the danger of derailment and consequent delay.

The overall dimensions of the machine are as follows: Width, 5 ft.; length with 8-ft. cutter bar, 17 ft.; height, 5 ft. 6 in.

It has been found that by cutting the coal seam in the center it requires only two small shots for the top and two for the bottom bench, which lessens the danger of damaging the roof, and practically eliminates blowouts. The machine has been the means at these mines of giving a cleaner product, more rapid cutting at less expense per ton, and a much safer method of mining coal.

The entries in these mines are driven 10 ft. wide and the rooms 15 ft. wide. The operation of cutting is as follows: When the machine is moved into the room, an anchor hole 2⅛ in. in diameter is first drilled in the coal under the band to be cut, and about on line with the left-hand rail; an anchor is fitted into this hole, and the feed rope attached. The machine is then turned on the turret by hand toward the right rib, making an angle of about 15 deg. with the track where it is automatically locked.

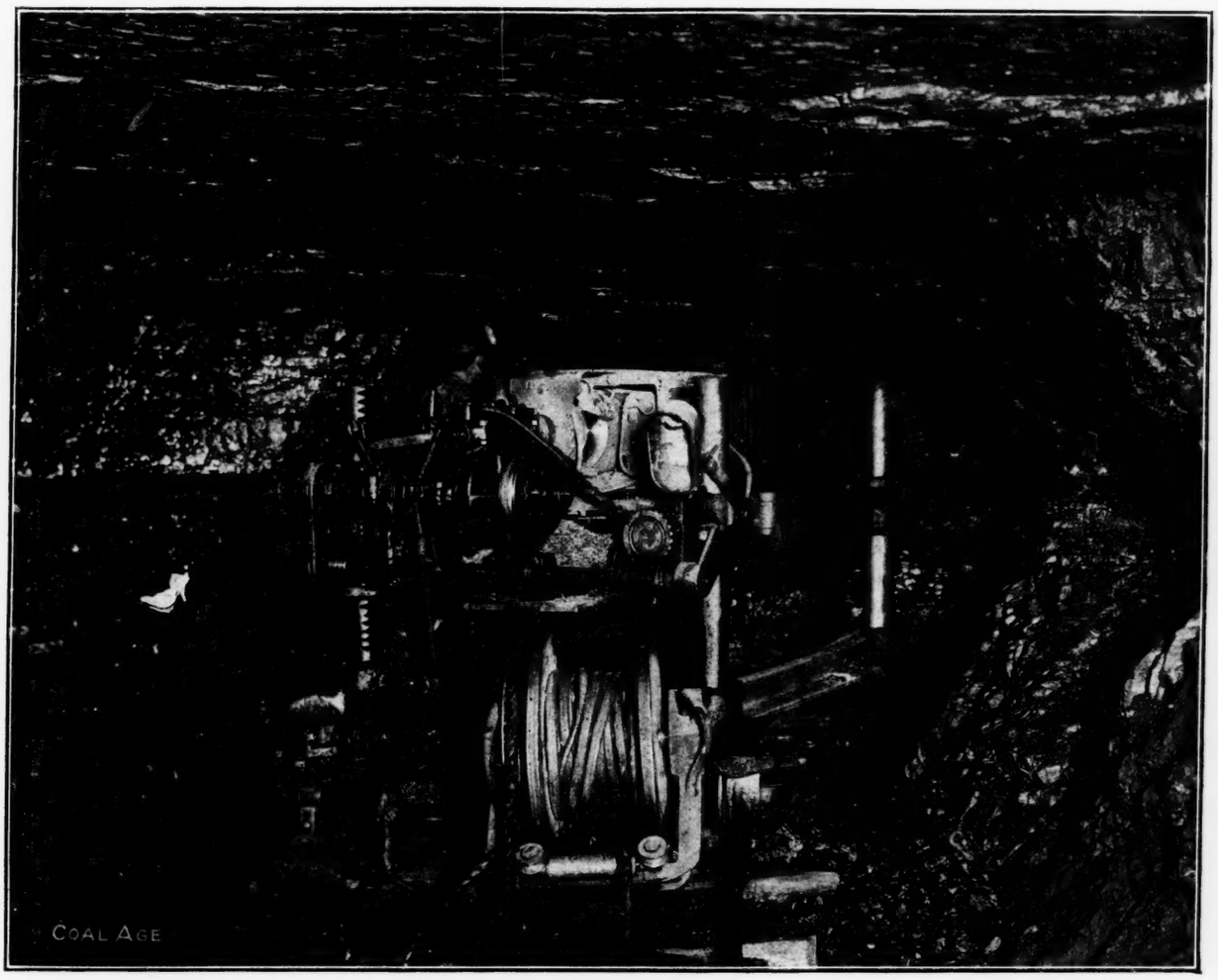
*Engineer, Columbus, Ohio.

The machine is then started and pulled toward the face, forcing the cutter bar into the coal to a depth of about 8 ft. When the cutter bar has reached its full depth in the coal, the feed rope is attached to an extension arm, which is securely bolted to the lower part of the truck, the rope being taken around a sheave and the end fastened to the machine proper. With this hitching the cutter bar is swung across the face, the speed being about 32½ in. per minute at the extreme end of the bar.

The cut across the face is complete when the bar stands at an angle of about 20 deg. to the left of the track, kerf, after which it is cleaned out, loaded in cars and hauled out of the mine. This insures an absolutely clean product.

Some idea of the performance of this machine can be obtained when it is considered that a 15-ft. place can be cut in 11 minutes from the time the machine enters the room until it is ready to leave. Twenty-five rooms have been cut in a shift of 10 hours. Since the installation of the first machine some eight months ago, the above company now has in operation 26 of these cutters.

Recently there have been numerous suggestions for a



THE CUTTER AT WORK IN THE SHALE BAND

where it is again automatically locked. The feed rope is then carried to the machine over proper sheave wheels and attached to a jackpipe set about 20 to 30 ft. from the face, between the track and the left-hand rib.

The feed is then started and the machine with its truck pulled backward, cutting the left-hand rib as the machine leaves the face. When the cutter bar is clear it is swung into a central position, the machine lowered, and the self-propelling gear thrown in. It is then in readiness to proceed to the next working place.

CUTTING IS ALL DONE IN THE SHALE

The cutting is done in the shale at the bottom of the band with the lower nose of the bits cutting into the coal about ¼ in., which causes the shale to fall down in the safer method of coal mining, especially in localities where the roof is faulty. Several coal companies have adopted the method of cutting the coal in the center, the object of this being to minimize the danger of blownout shots, and to lessen that of damaging the roof, also to secure increased production at lower cost.

The accompanying illustrations, together with the front cover of this issue, show the machine in various stages of the work and cannot fail to convey a good idea both of the make-up of the apparatus as a whole and the method of its manipulation.

It may be readily perceived that a machine so arranged as to require no unloading from its truck with the time losses incident thereto, has a great advantage over those of other types.

Banquet of West Virginia Coal Mining Institute

The banquet of the West Virginia Coal Mining Institute was held in the Hotel Kanawha, Charleston, W. Va., on Dec. 9, after the conclusion of the winter session. The hosts were the local mine operators. Considerably over 100 persons were present and the after-dinner speeches were exceptionally good. Joseph Holt Gaines, the ex-congressman, was toastmaster, and proved exceptionally witty.

Neil Robinson, mining engineer, Charleston, W. Va., delivered "Reminiscences of the New River Field"; Dr. I. C. White, state geologist, spoke on geology; E. W. Parker, statistician of the Geological Survey, discussed the need for having an organic union between institutes; Carl Scholz urged the claims of the American Mining Congress; Fred Paul Grosscup called on the operators to support the Panama-Pacific Exposition; Judge Ira Robinson testified to the value of industrial enterprises in building up the state of West Virginia; Fred Blue, state tax commissioner, declared that West Virginia had the lowest taxes and best system of handling its money in the United States; Fred Stanton spoke for the banking interests and Dr. J. E. Beebe wound up the speech-making with a short but lively address, complaining that the bankers, politicians, geologists, statisticians and judges had told the coal men what they should do while the coal interests themselves were silent and were not offered a chance to reply.

The Kentucky Mining Institute

Judge H. S. Barker opened the Kentucky Mining Institute at 1:30 p.m., on Dec. 8, 1913, with an address of welcome on behalf of the State University, of which he is president. In the course of his remarks he urged the operators to use their influence and money in extending the duration of the school sessions in their mining villages and emphasized the value of subordinating legal rights to human needs. At least one company in Kentucky is providing one-half the cost of extending the school year, the other half being paid voluntarily by the employees.

W. L. Moss, the president of institute, responded in the briefest possible manner. Then R. D. Quickel read what might be well termed the strongest paper of the meeting. Mr. Quickel is fuel agent for the Cincinnati Southern Ry., and his subject was the "Clinkering of Mixed Coal under High Temperatures." Then followed "Problems Encountered in Mining Coals in the Western Coal Field of Kentucky," by Newell G. Alford, assistant engineer of the St. Bernard Mining Co., Earlington, Ky., a good article, if not quite equal to many others he has written. Prof. C. J. Norwood then read an article by W. C. Whitcomb on "The Use of Gasoline Motors in Coal Mines," a conservative appreciation of the value and use of such locomotives. Thomas Robinson read a paper by Dr. S. R. Collier, of West Liberty, Ky., on the "Oil Fields of Northeastern Kentucky," and Prof. W. E. Freeman, of the State University, read a paper on "Safeguards in the Use of Electricity in Mines." Otto A. Rothert, the historian of Muhlenburg County, talked interestingly on "The Bearing of Coal Mining on Local History," showing how early was the development of the West Kentucky field.

Senator J. E. Bosworth, of Middlesborough, Ky., was not present, so E. B. Wilson delivered an address on "The Old and New Way" of mining coal, illustrated by some 60 slides.

The Summer Meeting

A resolution supporting the Foster bill in Congress, which aims to provide national aid to mining schools for educational extension and investigation, was passed unanimously. The next meeting will be held at Lexington, probably in accord with the constitution, on the second Monday in June. There has been some disposition to violate the provisions of the constitution and to meet at the winter session in some other place than Lexington. It seems a pity, however, to hold the winter meeting in the mining districts, for the weather is then usually unsuited for traveling around the mines. If the constitution is to be amended or broken it should be done for the purpose of transferring the *summer* meeting to the coal-mining regions.

The Smoker

The evening session of the Kentucky Mining Institute was a smoker in the Hotel Phoenix, tendered by the Mining Society of the College of Mines and Metallurgy. The meeting was opened by President Moss, but as he had to leave on an early train, the chair was later occupied by B. F. Hutchcraft. At the suggestion of W. L. Moss, T. J. Barr opened the discussion by a statement of the difficulties in deciding what constitutes a "mine accident"? when is a death in the mines to be listed as a "fatal mine accident"? what constitutes a "serious mine accident"? and what accidents should be reported for the mine inspector's record?

What Is a Mine Accident?

Mr. Barr instanced the deaths at the Taylor shaft. Several men went to an abandoned coal pit to see whether the water being drawn away from the neighboring mine had any effect on the water in the shaft. One man became asphyxiated by the bad gas in the pit and was drowned. Those who attempted a rescue suffered the same fate. Mr. Barr stated that as the shaft was completely abandoned the question arose: Was that occurrence classifiable as a mine accident?

Some injuries, properly attended to, would not result in death but complications often arise, such as pneumonia, and it then becomes, according to the speaker, questionable whether or not the death should be classed as a fatal mine accident. Again, Mr. Barr would not call any injury serious which is not likely to produce permanent disability. Smaller accidents, such as the mashing of finger with a hammer, should not be reported.

The Kentucky Ambulance Chaser

W. L. Moss stated that he reported no accidents where the injured were able to return to work within a week. Other speakers were Alexander Frost of the North Jellico Coal Co., Wilton, Ky., and W. B. McCord Johnston, general manager Belljellico Coal Co., Belljellico, Ky. The latter stated that he had made a complete settlement with a man whose leg was broken, for $250, and the satisfying of certain store and tenement bills total-

ing in all $300. The court decided that the figure was too small and gave the matter to the jury, which awarded $6500.

Johnston's blacksmith recently ran after a mule which had run away. He received a scalp wound and the doctor put two stitches in his head. Within an hour an ambulance chaser was on the ground who offered him $425 cash for his case, the attorney agreeing to meet all the costs of the suit and stipulating that he should receive all the damages collected. Mr. Johnston declared that some men did not wait on an accident, but brought suit to recover for impaired health due to bad air. In fact, Mr. Johnston declared that all accidents were "fatal" in Kentucky, a few to the mine worker but all to the coal operator.

Operators Demand That Mine Workers Abide by Contracts

Because the "Mine Workers" in central Pennsylvania have repeatedly violated their labor contracts, such conduct resulting in more than 100 strikes since the present scale agreement went into effect, the operators have issued the following letter to the "Union" officials, giving the latter ten days to comply:

THE ASSOCIATION OF BITUMINOUS-COAL OPERATORS
OF CENTRAL PENNSYLVANIA
301 BETZ BUILDING

Philadelphia, Dec. 12, 1913.

Mr. Patrick Gilday, President,
Dist. No. 2 United Mine Workers of America,
Morrisdale Mines, Penn.

Dear Sir:

The Executive Board of the Association of Bituminous Coal Operators of Central Pennsylvania held a meeting here today, approved and directed that the following communication be forwarded to you at once:

Whereas the Association of Bituminous Coal Operators of Central Pennsylvania, hereinafter called the Operators, entered into an agreement bearing date April 20, 1912, with the United Mine Workers of America of District No. 2, hereinafter called the Mine Workers, for the purpose of governing their relations as to wages, general rules and regulations for the period of two years, expiring March 31, 1914, and

Whereas this agreement was consummated and entered into by the Operators on the expressed assurance that this contract would be faithfully kept and performed by the Mine Workers, and that the officials of your organization guaranteed the full performance of this contract on the part of the Mine Workers, and

Whereas, Rules 12 and 13 of said agreement provide, "Should differences arise between the Operators and Mine Workers as to the meaning of the provisions of this agreement, or about matters not specifically mentioned in the agreement, there shall be no suspension of work on account of such differences, but an earnest effort be made to settle such differences immediately: First, through the management of the mine and the Mine Committee; Second, the first method failing, the matter shall be referred to the Operators' Commissioner and the Mine Workers' Commissioner" and in the event of a failure of such commissioners to reach an agreement, then to be referred to a permanent Board of Arbitration whose decision shall be final, nevertheless the year 1913 has resulted in an absolute disregard of these covenants on the part of the Mine Workers, and

Whereas, notwithstanding the fact that Rule Number 15 provides, "the right to hire and discharge, the management of the mine, and the direction of the working forces are vested exclusively in the operator, and the United Mine Workers of America shall not abridge that right," the Mine Workers have absolutely disregarded this rule in that they have at numerous times served notices on substantially every operator belonging to our Association, that unless all of the employees working for such operator should become members of the Union on or before certain dates mentioned in said notices that they, the Mine Workers, would close or shut down the Operators' respective mines, and in many instances did close the mines for this reason, and refused to return to work unless such non-union employees were discharged. This conduct is in direct violation of your contract and specifically interferes with and abridges the right of the Operator to hire and discharge, of the management of the mine and of the direction of the working forces; this conduct and violation of contract on part of the Mine Workers, as well as that mentioned in the preceding paragraph, has resulted in more than 100 strikes during the life of our Scale Agreement, and

Whereas, notwithstanding the fact that the Operators appealed to you as President of the United Mine Workers of America of District Number 2, to enforce and carry out your contract, and your repeated admissions that the Mine Workers were not living up to their contract, but that you individually were doing all in your power to compel performance thereof, nevertheless it has been open and notorious that your sub-officials, organizers and like employees have been continuing this line of conduct down to the present date, and

Whereas, notwithstanding the fact that the Operators have appealed to John P. White, National President of the Mine Workers of America, for the performance of this contract on part of the Mine Workers, and that he has replied that full authority has been given to you to deal with the situation, still such conduct continues down to date, and

Whereas, these violations of contract have become so notoriously defiant and continued that the membership of this Association have frequently and determinedly notified its Executive Board, that unless this conduct ceased at once, they would withdraw from this Association on the ground that it was useless to contract with a body that absolutely refused to carry out their contract and with no person sufficiently in control of the Mine Workers to enforce the performance of the same, BE IT THEREFORE RESOLVED:

That the Operators enter a vigorous protest against the line of conduct hereinbefore mentioned, and demand of Patrick Gilday, President, and the Executive Board of the Mine Workers of this District, an immediate cessation of the conduct hereinbefore recited, and that they strictly enforce on the part of the Mine Workers their covenants contained in said contract, and in event of the failure to cease such conduct within the next ten days, that the President and Secretary of the Operators' Association shall call a special meeting of the members thereof for the purpose of considering the final dissolution of its Association on the specific ground that it is useless to enter into contract obligations with a body that steadfastly refuses to fulfill the same and which no official apparently has power to enforce.

Yours truly,
W. R. ROBERTS.
Secretary.

The Pittsburgh-Buffalo and Allied Companies

Under date of Dec. 10 the *Boston News Bureau* makes the following comments on the insolvency of the Pittsburgh-Buffalo Co.:

Suit for appointment of receivers for the Washington Investment Co., of Pittsburgh, was begun in the Federal court at that city yesterday by the Cleveland & Pittsburgh Coal Co. The complainant asserts that the Investment Co. is solvent but temporarily embarrassed. Earlier in the day James K. Cassiday had been appointed receiver for the Coal Co. by the Federal Court at Cleveland on complaint of the Pittsburgh-Buffalo Co., of Pittsburgh which went into receivership Saturday. Later James Bryan was appointed receiver by the Pittsburgh Court of Common Pleas for John H. Jones, president of the Pittsburgh-Buffalo Co. The application was made by the Goodman Manufacturing Co., of Chicago, a creditor. Immediately afterward the Sharon, Penn., Saving & Trust Co. began suit against Mr. Jones for $10,000 on a promissory note secured by Pittsburgh-Buffalo Co. stock.

The actions yesterday followed the appointing of receivers for the Pittsburgh-Buffalo Coal Co., a $6,000,000 corporation, and the Johnetta Coal Co., Saturday in Pittsburgh by United States Circuit Court Judge Joseph Buffington and for the Four States Coal & Coke Co., a $6,500,000 corporation, by Judge A. G. Dayton, of the United States District Court at Philippi, W. Va.

Strikes, explosions, floods and other incidents to coal mining are given as the causes of the temporary embarrassment of the coal properties.

Anecdotes of the Mountain Folk

By Neil Robinson*

SYNOPSIS—Amusing stories concerning the mountaineers of West Virginia and Kentucky who have been aroused from their primal mode of life by the encroachments of the mineral man prospecting for coal.

The West Virginia Coal Mining Institute begins its sessions this morning in a very serious mood. Our estimable secretary, E. N. Zern, has arranged to lead you through a maze of profound discussions relating to chemistry, salesmanship, the influence of public sentiment, scientific mining and the enforcement of the prohibition law: we will travel to Panama with former Governor MacCorkle; Hon. Lee Ott will tell us the story of the humane compensation law; and Governor Hatfield, for many years a distinguished medical practitioner, will speak on sanitation and the protection of health in mine villages.

A few years ago, institutes were unknown in our state. Our gatherings were limited to political conventions, meetings of various grand lodges and occasional camp-meetings. The individual manager and operator never visited the plant of his neighbor. It would have been regarded as impolite—possibly as spying. There was very little traveling to the so called backwoods or "up the creek." The operator journeyed from the mine to the banking town for a payroll and sometimes visited the general office of a railroad to sell some fuel. The motive power at a mine was a mule; the best mining machine was Irish and for ventilation we sometimes lighted a fire at the bottom of a mud-daubed frame stack proudly called a furnace.

It would be interesting to trace the development of the mining industry from these crude beginnings and make a contrast with the goal which the eminent men in our profession are now seeking to attain, but I prefer to carry you away for a few minutes from the symbols of chemistry, the wonders of electricity and the constructional work of man for a little journey to the lands beyond "the head of the creek."

A Trip to the Mountains

I count it as a bit of rare good fortune that professional duties called me into the mountains while the men and women there were still natural, the spinning wheel in use, handmade rifles in service, good old sorghum served in coffee, and celluloid collars and patent-leather shoes unknown. There was always a cordial welcome for the stranger and many a time the head of the house has called from the door of a cabin "get off your horse and come in and warm up—you know pore folks have pore ways but we're glad to see you."

Once I entered a field that had evidently been visited by several coal seekers, for the following loudly shouted conversation took place. (The man who owned the coal opening I was endeavoring to locate was plowing far down on a hillside below the ridge road:)

"Hello! Are you Mr. Frank?"

"Yes; and who mout you be?"

"I am Mr. Robinson from over at Charleston in Kanawha County."

Mr. Frank made a megaphone of his hands and literally yelled back:

"Air you one of them dern mineral men what goes through the country a lookin' at coal seams and a leavin' down fences?"

Of course, it was useless to deny my guilt and we finally compromised by his election as boss of the rail-fence gang with the right to discharge himself if the work was not well done. No one was discharged.

Traded His Wife for a Rifle and Dog

Two days later I came to the clearing of an old settler who had been there "ever sence it was a case of one blaze from home and two blazes fer home." The cabin was without a window and as we sat by the log fire, our light from the open door was cut off by a tremendously large woman, barefooted and smoking a pipe, who stood on the step watching some kittens at play. My local guide looked up in some surprise and said: "Why, Mr. Lotts, I did not realize that your wife was so big—I thought she was a thin woman." The old man put his hand to the side of his mouth and said: "Smith, I reckon you're thinkin' of the t'other one. That 'un was a powerful worker, but she was thin es a fence rail, but you know I traded her 'n a rifle for this 'un an' a coon dog—an' 'fore God, Smith, I jes wish you could see that coon dog."

Many times in my travels I have met men who under more favorable circumstances might have graced the highest courts in our land or have become masters in the world of commerce and finance. These really great men in many instances were lost to the great world through a fine sense of duty to dependent women and children in their little world. As the poet has said: "Full many a flower is born to blush unseen and waste its sweetness on the desert air"—and many acts of devotion in the depths of the mountains are unknown to mankind. Let us hope that they are recorded in the Great Book of Life.

The typical mountaineer of the older school is nearly always logical in his processes of reasoning. He reaches his conclusions without mental finessing and has a why for every wherefore. I recall passing a camp-meeting ground in the early morning and afterward passing scores of men and women hurrying to the services. It seemed to me that every house on the mountain would be deserted and that all thought of dinner might have to be abandoned, but a little before noon we heard an old-fashioned flail resounding from a barn and knew the owner would soon eat and perhaps we might be able to join him.

While the meal was progressing, I asked my host how it happened that he was not at church. "Well," he said, "I ain't there fer two mighty good reasons. In the first place I been usin' my stock purty consid'ble this season and I ain't had no time fer to corn cob 'em down and get 'em fittin' fu' swappin'; and in the next place I was born and raised in this here county and I know there ain't enough religion among the perfessin' Christians fer to

---

Note—President's address, West Virginia Coal Mining Institute, Charleston, W. Va., Dec. 8, 1913.

*Coal expert, Charleston, W. Va.

save one soul and I don't perpose to go down to that air meetin' and git my chances of heaven mixed up with them dog-gone perfessin' Christians."

Burned Wood Even though a Coal Seam Outcropped in His Back Yard

There was a fine seam of coal six feet in thickness showing in the outcrop by the barn but wood only was burned in the house. This fact, however, was easily explained: "Bein' a man of sense and jedgement as I 'low ye are, ye can see for yourself that that coal is too dern fur fer me to go pack it and it ain't fur enough to hook up a team and go haul it—so we jes burn wood." In justice to his wife it is only fair to remark that she handled an ax with great skill.

Down on the Cumberland Plateau, in Tennessee, I stopped at a cabin that was overflowing with children and when we all sat down to supper the table was lined on both sides from wall to wall. Of course, a reference was made to the fine large family and the pride the parents must have in this possession, when the old man by way of reply explained everything: "Yes, sir, it's a big family, but it ain't a matter of choice—it's a matter of need-cessity. Us folks on the mountain hev to hev big fambleys in order fer to git a fair sprinklin' of boys. Ef you have a passel of boys around the house some of 'em will do a leetle kase they're fond of their maw, some kase they're feard of their paw—and some kase they ain't got no better sense—and 'tween them boys doin' a leetle and me and the old woman here doin' a h— of a site we manages to live."

There is a charm about the mountains that is not equaled by the prairies with their monotonous levels; and I have had days at sea when the entire ocean would have been gladly traded for a single knob in the Alleghenies. There is a wonderful charm in our clear, cold streams; in the hills when tipped with clouds; the drumming of a pheasant; the play of the squirrels; the flight of birds—all these please the eye.

But there is another pleasure in store for the lover of the woods. Imagine a long day drawing to its close, twilight deepening into dark. You are traveling a strange trail in a strange land, when the tinkling of a cow bell or the barking of a dog is heard in the distance and presently the sweet aroma of the "frying pan and bacon" floats down the valley. That is a blissful moment. You are nearing a home for the night and a long hour's talk before a big log fire with all the family present and perhaps a few of the neighbors who have stopped on their way from a grist mill.

One night like this in the Pine or Cumberland Mountains of Kentucky I tried to harvest a little information for use on the following day, but every inquiry addressed to the head of the cabin brought a stereotyped reply, "I don't know nuthin' about them things, but I allow as I know as much about matermunny"—meaning matrimony—"as any man on the crick." My host was so full of this subject that after supper I naturally asked for particulars and this was the tale that he told.

An Authority on Matrimony

"I've been married three times—and still a livin'—and that's mor'n most of my neighbors can say—and eight of my children are livin'—and most of 'em here now."

They were all there, commencing with two grown girls and ending with a baby a year old.

"The very fust time I married I got a woman with lots of sperrit. She had the reddest head this side the mountain and one of her eyes was a leetle crossed, and she had more temper than me—and I got some. We fit frequent. We surely did—and finally I got to norating round that I was the only man on Kaintuck waters what could live with her. In them days a feller what had lost his last wife lived in that old clearin' next mine and he 'lowed he could live with her at least six months and was willin' to bet a crackin' good young steer against a colt I was raisin' that he could. Me and my wife that then was, talked it over and she was agreeable to goin' pervidin' we could git a de-vorce—and we done it easy, kase the squire what married us wuzn't one of the book-keeping kind and we jes tore up the old stificate in the presence of the two Ramsey brothers who was some of her kin.

"She hitched up with the other feller and I made a run of moonshine and took things sort o' ca'm and easy like fer a spell. Onst in a while I'd go down to the line fence and look over to see how the steer I was going' to get was comin' on, and then I got to meetin' the other feller who was still a stickin' and had took to watchin' my colt. I seen he was gettin' powerful interested, as the six months was nigh up, and it made no diffunce how many cockleburrs that colt wore it looked good to him, and I was gittin' mighty much worrited.

"He sure was game. The day before the time was up I knowed that somethin' had to be did—and did quick—and I raked up all the green apples and green corn and collicky stuff I ever heerd of and commenced stuffin' that colt—and it took—and afore midnight I went after the feller to come and help do some doctorin'. He swore a site and said it would die afore mornin' and he was goin' home—and he went that way—but he never stopped and he never come back—and I druv the steer over into my lot before 'red-top' turned out to git her breakfast!"

The talk was general for a little while, the men said they remembered the affair, and "red-top's" two girls remained quiet, apparently taking the adjustment of affairs as perfectly natural. Without any urging the old man took the floor again.

"Lots of things is wuss and yit sometimes maybe you find 'em wusser—and too much sperrit in a woman ain't so bad when you got one what ain't got any—like my second wife. She was com'fble fat when I got her and kep gittin' fatter and fatter and I 'lowed I'd hev to git the guv'mt to help feed her, when she up and died rising three hunder pounds in weight. We had to knock down a lean-to off'n the barn to make a box, and it took that other feller's steer and one of my own to sled her up on the p'int whar she still is—but I bet she ain't no lazier dead than she was afore it happened."

"I ain't goin' to say nothin' 'bout this little woman here now, kase she's young and spry and I'm getting stiff in the jints and mout have a leetle trouble in gittin' another if she'd run off."

There was neither a lamp nor a candle in the house and the children lighted slivers of pitch pine for illumination. Some of the rich pitch spluttered into the corn bread and gave the latter a flavor that was never known in modern cooking schools—but perhaps it was introduced to prevent the "last chance" wife from following in the

Jumbo-like footsteps of number two. Our eminent conservationist, Doctor White, would have commended my economy in food consumption—at that time.

Religion of the Mountaineers

Upon innumerable occasions I have been asked about the religion of the people in the mountains, but the question is hard to answer. Earnest men and women are found in every community. The services of preachers are well attended and the only songs one will hear on a long journey are those taken from hymnals. Great consideration is always given to a minister of prominence and the housekeepers, if notified of the coming of a presiding elder or bishop, will spend days in preparing food.

Some five or six years ago I was planning a trip through eastern Kentucky when the itinerary of a presiding elder was made known to me by the enthusiastic brother who had perfected the arrangements. I at once showed appreciation of the skill of this brother by destroying my own plan and accepting the one made for the elder, but to avoid a conflict in dates and overcrowding in small houses, I made the complete circuit two days in advance. That was the time I gained in weight at the rate of 16 oz. a day. The elder lost about 20 lb. on his trip, which is hard to account for as I found the living conditions unusually good.

But I must sand the track, sprag the cars and stop the train. It would please me to tell you about the amateur geologist over in Buchanan County, Va., who accounted for an immense mass of broken stone on a slope of the mountain by declaring that he had "studied about it a site and finally 'lowed that when the Lord was in these here parts sowin' rocks he must have drapped his apron string in a-comin' over the pint."

The neighborliness of the people could be exemplified by the attitude of a good old friend in a Southern county. He was divorced and at once married again, and the divorced wife immediately married and went to live on the adjoining place. When my host was asked how he got along with his ex-wife, he said: "Fine, mighty fine. We are the very best of neighbors. Why, there ain't a family on the mounting we borrow as much from as we do from them folks."

At the risk of being called a bad neighbor, I will cease borrowing from your time and will now turn the institute into its accustomed channels, at the same time hoping that your stay in Charleston may be pleasant, that old-time friendships may be renewed and that your deliberations may result in great good for the thousands of men whose welfare and safety rest so largely in your hands.

❖ ❖

Purchasing Coal under Specifications

By Reginald Trautschold*

SYNOPSIS—Some notes on the impracticability and inconsistencies of this method of coal buying. Behavior of the coal in the particular furnace in use is a more important consideration than its theoretical heat value. Complications in methods of sampling and the impossibility of devising an adequate specification are among the troub'esome features of the method.

❖

Among the claims made by the advocates of purchasing coal under specifications is that, being paid for on a quality basis, the coal dealer is incited to prepare the coal more carefully. This result, though not the only or greatest advantage claimed, undoubtedly is the object desired and is also the result upon which the feasibility and practicability of the policy must depend. To the average dealer, however, increase in his trade is sufficient incentive to keep him supplying the best grade of coal, and the larger the buyer the greater the incentive to give individual satisfaction. Therefore, the claim that the dealer would be incited to more careful preparation of his product seems hardly convincing.

Some Inconsistencies in Coal Specifications

Carrying inspection of a commodity to the extent of ascertaining its chemical characteristics, while perhaps of exceeding interest, would often, in the case of commodities purchased continually and in large quantities, prove neither practical nor feasible. In the case of coal, the impracticability, for the average consumer—he who buys in lots of not over three or four carloads at any one time—would seem obvious. Such consumer would have no conveniences for analyzing and would have to spend from two and a half to ten per cent. of the cost of the coal in having the necessary tests made at a laboratory—almost as much as any reduction he could expect in price should the coal be found to be considerably below specifications. Furthermore, as occasional consignments may be reasonably expected to show better results than the specified requirements, instances would crop up when the expense of the analysis would prove not only a dead loss, but the coal would be unnecessarily increased in price thereby.

It must be considered also that the cost of mining coal at any mine is not in any way regulated by the heating value of that coal and, therefore, a valuation based on heating value and chemical characteristics would place an unfair profit on certain grades of coal and entail a loss on others. As a result only the more profitable grades would be dealt in and the others, many of which possess high heating value and other desirable characteristics, though possibly failing to meet certain chemical requirements, would only reach the consuming public when other coal could not be procured.

For instance, the prices of anthracite coal at the mines, which may be considered as indicating the relative cost of mining and preparing the various sizes, shows chestnut to be much the most expensive as far as heating value is concerned. Anthracite of larger size decreases in cost, per heating value, fairly uniformly, broken costing but about 80 per cent. as much as chestnut. In the sizes below chestnut, the decrease in cost per heating value is much more marked and shows greater variations,

*Consulting and contracting engineer, 160 Waverly Place, New York.

pea costing about 62.2 per cent., buckwheat No. 1 about 38.1 per cent., buckwheat No. 2 about 19 per cent., barley about 14.1 per cent. and culm about 13.8 per cent. as much as chestnut for the same heating value. Different grades of bituminous coals show somewhat similar variations, not to quite such a marked extent, it is true, for a large proportion of this class of coal is sold as mine-run and is crushed at the consumer's plant, thereby placing a more uniform price on the heating value of the coal.

Practical Considerations in Coal Purchasing

The behavior of different coals in the furnace has considerable weight upon their power-producing capacity and this cannot be ascertained by chemical analysis, thereby detracting considerably from arguments in favor of purchasing coal under specifications. One coal of relatively higher ash contents and lower heating value than another may prove to be the much more satisfactory and economical on account of its ash not clinkering while the better coal, as far as heating value is concerned, might clinker to such an extent as to make its use uneconomical; or, at a high rate of combustion, ash may clinker in a given coal, while at lower rate it may not. Under the ordinary specification system, the customer could not refuse the clinkering coal but would have to pay a higher price for it than for a poorer (?) grade that might have proved more economical and satisfactory for his particular use.

The relative percentages of fixed carbon and volatile matter have differing results on the heating value of coal and though the B.t.u. test may show this, it cannot ascertain the actual results in the ordinary furnace. Volatile matter may be combustible or noncombustible; a coal with a lower fixed carbon content and greater volatile matter constituent may have a higher heating value than one in which the fixed carbon is proportionally greater and the volatile matter less or *vice versa*. This the B.t.u. test will bring out, but the behavior of the coal under actual operating conditions is another matter. Volatile matter may prove an advantage or a disadvantage irrespective (without apparent definite effect) to its proportion of combustible qualities or the heating value of the coal.

Moisture in coal is customarily limited under the specification system, the dealer guaranteeing a maximum moisture content which if exceeded, calls for a reduction in the price of the coal. The presence of moisture in coal is largely accidental and can no more be guaranteed or controlled by either the dealer or the miner than can the weather, so why complicate conditions which cannot be provided for? The allowable percentage of sulphur is also usually specified, a reduction in price being called for if the sulphur content exceeds the percentage called for. The proportional part of sulphur in combination with other metals and minerals in the ash is what usually causes trouble, a relatively large proportion of free sulphur or easily reduced compounds of sulphur not having the same detrimental effect as certain other combinations containing less sulphur.

Some Complications in Specification Buying Methods

The yearly spring reduction in the price of coal at the mines, a practice that has done much to regulate and steady the coal trade of the country, would also be complicated by any universal adoption of the specification method of buying. A reduction in cost per heating value of coal, similar to the present reductions in the cost of coal per ton, would be conducive to numerous complications. It would also tend to increase the congestion of expensively mined coal, much of which would have high heating value, and the shipment of the coal upon which the greatest profit per heating value would be realized.

The advantages claimed for "purchasing coal under specifications," though theoretically justified in great part, could only be fully realized by the adoption of complicated and detailed specifications; and even then it could be severely criticized, while there are unanswerable arguments to be advanced against such a method—business reasons, that bear considerable practical weight. For instance, irrespective of the merits of the case, the average coal dealer can well afford to contract with a large consumer to supply coal over a long period at a considerably lower price than if each consignment requires a distinct bargain or contract. In fact, should he be able to contract with a few important customers to take a sufficient amount of coal during the year, he could afford to sign up at a price that would simply cover his expenses, depending upon trade from other customers and smaller business for his profit. To arrive at his minimum price, he would figure on the known cost of his supply and the approximately known expenses to which he would be subject. That is, he would figure in known quantities and so closely as to prohibit the taking of speculations as to the value of his stock, invariably having obtained his contract as a result of previous satisfactory service and the incentive of continuing such service as far as he is able in order to secure future business.

Under the specification method, not only would his expenses be increased by the frequent tests necessary to check the claims of his customers, but the speculative risk of a certain consignment of coal from the mines falling below specifications would have to be taken. To avoid the possibility of this latter, he would have to base his price on a coal of less heating value than the average fuel to be supplied to his customer, and the latter is called upon to pay such a price for coal as would protect the dealer against loss and cover the expense of the analysis by the dealer and himself.

The relatively small customer would be under a serious disadvantage in purchasing under specifications for he could ill afford the expense of frequent tests; neither would he have the necessary influence with the dealer to insist upon his rights and would, in many instances, be forced to take coal that had proved unsatisfactory to the more important of the dealer's customers.

The rejection of coal or the reduction in its market value, on account of its failure to live up to certain chemical specifications or meet a laboratory-heating test, may be justified in some cases, but in others it does not necessarily follow that such failure means unsatisfactory coal under working conditions. Visual inspection can be just as reliable at times and no sample testing can be taken as conclusive evidence that the mass of coal is similar in all respects.

Certain effects of the adoption of the specification system, disadvantages that are just as important as the advantages may then be summarized as follows:

Summary of Disadvantages

1. Impossibility of a purchaser contracting for his

entire coal supply for an extended period at as advantageous a price as under the "tonnage system," owing to the dealer having to assume the speculative risk that the coal will not fall below specifications.

2. The failure of chemical analysis and laboratory-heating tests to ascertain the behavior of coal under the purchaser's operating conditions, the "specification system," however, compelling the purchaser to accept any coal that met the specifications, irrespective of its behavior in the furnace.

3. The injustice to the small consumer who cannot afford to assume the expense of careful tests, increasing the liability of his having to accept coal that had proved unsatisfactory to some other, and larger customer of the dealer.

4. The increased difficulty in the disposing of coals that entailed heavy expenses in mining and the unfair impetus given to business in the coals that have been mined at least expense, tending toward general elevation in the price of all coal.

5. The tendency to cause congestion of unsalable coal at the mines, even that which may have excellent heating value but fail to meet certain of the requirements of the ordinary specifications.

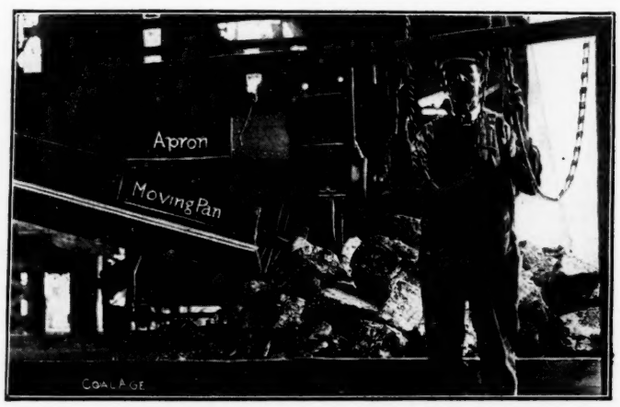
6. The danger of disputes as to the accuracy of various tests and the ill-feeling between dealer and customer that continual claims and disagreements would bring about.

7. Annoyance, expense and loss of time brought about by disputes and in the replacement of unsatisfactory coal by other coal that may or may not prove satisfactory.

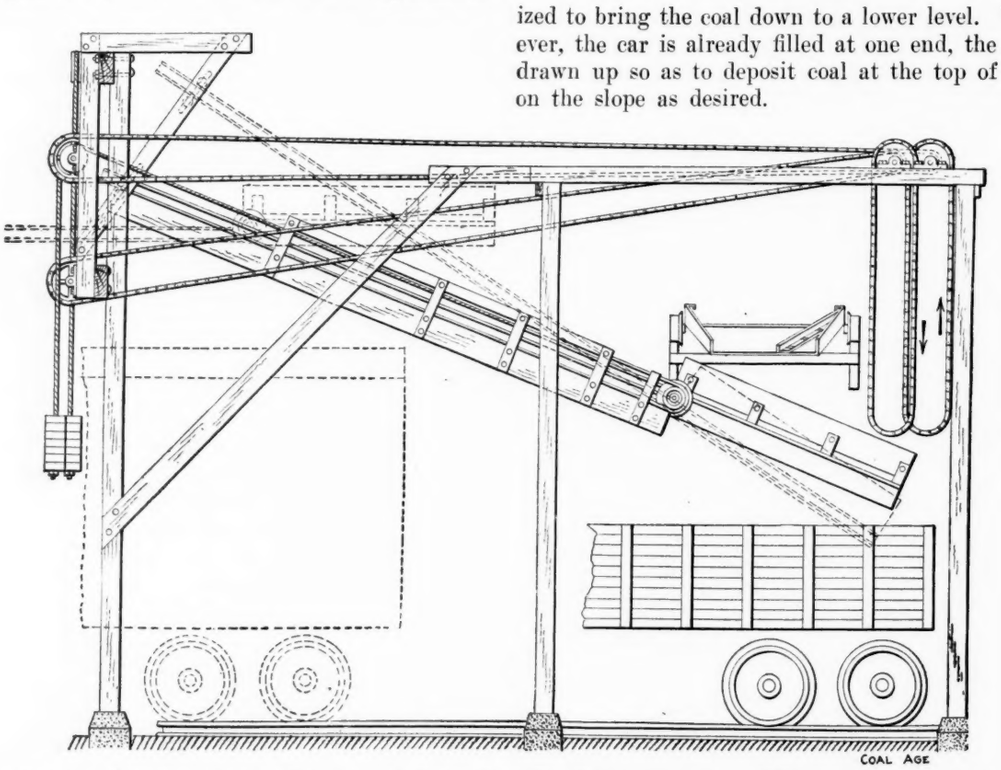
8. The added expense to the small consumer by the adoption of the "specification system" and the probable difficulty of his ability to enforce his claims.

A Loading Boom

In the southern Illinois field a number of operations are putting in the loading boom, manufactured by C. C. Hatfield, of Duquoin, Ill. At right angles to the main pan, which discharges diametrically across the track is placed another pan which lies parallel with the rails and which can be pulled backward and up or forward and down. Thus the coal can be placed in the car with the minimum of breakage. When the car is empty it can be loaded with the pan slidden forward to its extreme distance. Thus a long length of the sliding pan will be utilized to bring the coal down to a lower level. When, however, the car is already filled at one end, the pan can be drawn up so as to deposit coal at the top of the pile or on the slope as desired.



AN ILLINOIS LOADING BOOM



BY THE SLIDING OF THE BOOM, THE COAL CAN BE DEPOSITED WITH MINIMUM BREAKAGE

The wide range of motion and the possibility of tilting it at will is shown in the drawing. It can be used for cars of varying elevation with equal facility. The drawing shows a wooden tipple but the device has been applied to more modern and permanent construction.

Discussion of Election of Mine Inspectors

SYNOPSIS—The origin of the elective system of choosing mine inspectors in the anthracite region of Pennsylvania. Reasons why the law should be abolished. Controlling power of the miners' organization under the election law. Commission appointed to revise the anthracite mine law. The elective system in Illinois discussed. Suggested appointment of inspector by the courts and for a term of good behavior. The Institute strongly opposed to the elective system. Resolution adopted.

D. J. RODERICK (*Pennsylvania*)—Mr. President and members of the Institute: I was asked this morning to lead the discussion of this question of the "Election of Mine Inspectors," because, unfortunately, I am one of those who come under the elective feature. The inspectors of the anthracite region of Pennsylvania all come under the elective system, while those of the bituminous region come under the appointive system.

In 1901, a certain element in our state conceived the idea that if they could get control of the mine inspectors of the state it would make their forces stronger. The legislature being in session at the time, they sent a large delegation to Harrisburg and secured the passage of a law making the office of mine inspector in the anthracite region of the state elective, reducing the term of office from five to three years. Previous to that time, the anthracite inspectors were appointed by the governor, after examination, but since the passage of this law, they are elected by the voters of a certain prescribed district. We must first take an examination, then register with the County Commission, and be placed on the ticket to run for the office of mine inspector.

Elective System Should Be Abolished

The elimination of this law is one of the questions that should receive the consideration of this institute. The matter was thoroughly discussed in Chicago (1910), and I think, at that time, we had one champion of the elective feature; he was also in favor of the referendum and recall. This man was later elected to the office of mine inspector; he served about three months and was recalled; so he had a dose of his own medicine. The elective feature connected with the office of mine inspector is a sample of vicious legislation. Suppose, for example, that after you have been studying for the examination, you succeed in passing the same, six months prior to the election. During that six months you must cover the whole district in a personal campaign. It would not be so bad if the elective feature was confined to the district in which the inspector belongs. For instance, I come from Luzerne County, which has six inspectors, and I must cover that whole county for reëlection. In my district about half of the territory is agricultural and the other half mining. I must see the voters, go down into common places, meet them in the saloons, hobnob with them, and try to curry favor and get their votes for the office of mine inspector. People in the agricultural section don't care who is inspector; and the man who gets the office is the man who can spend the most money and be the best fellow while running for office.

Another feature of the situation is the time lost by an inspector, in a campaign, which starts three months prior to election. There are three months lost in soliciting votes that should be devoted to the inspection of mines. This acts greatly to the detriment of the conditions that prevail in the mines. Moreover, it is very unfortunate for a man in the position of mine inspector to have to humble himself to Tom, Dick and Harry, in the saloons, and to the neglect of his work. Again, to canvass the agricultural district is not an economical situation. A man must hire a team, or an automobile, travel around the country, and meet farmers here and there, who know no more about mining than a child who never saw a mine. They have no interest in them.

The effect that the elective feature has upon the efficiency of the mine inspectors is detrimental also from the operators' standpoint. A mine inspector goes to a mine and finding things as they should not be, calls the attention of the operator to them and asks to have them remedied. It may mean a large amount of expenditure of money. You tell him it must be done regardless of the amount of money involved. That operator complies with your request; but, in his heart, he says, I will get square with you, two or three years hence, and he does. He puts money into the campaign to have the mine inspector defeated. The matter is equally as bad from the miners' standpoint. Miners, organized as they are, often make a great deal of trouble for the inspector.

Influence of the Miners' Organization

In the anthracite district, in the last agreement made between the operators and the miners, the miners put one over on them. They succeeded in the settlement of that strike, and it was agreed that the operators allow them what is known as a grievance committee, at every mine. This committee consists of three members working at each place; and they have the privilege of going with one of their officials to the office of the colliery and bringing the matter before the mine officials. The mine inspector in going around through the mines, sometimes meets this grievance committee, and this often interferes with the inspector's business. For instance, they will tell him that the air is bad in a certain section of the mine, or that it is not what it should be; that the company is not furnishing supplies to the man in certain sections of the mine, as the law requires. In fact, the methods employed by the United Mine Workers is often hard on the mine inspector, to a certain extent, bringing things to his attention some time after the matter has been remedied, and using him as a lever to adjust their grievances with the operator. Always where there is the least chance to bring in the mine inspector, he must act as umpire between the operator and the miner; in fact, on many questions in regard to which he should not interfere.

If a mine inspector gets a request from an official of the United Mine Workers, and does not act, it is heralded throughout the district; and the matter is taken up by the locals, which pass resolutions denouncing your refusing to act. If you go through the mine and see a miner violating the law by using two kinds of explosives, or find him ramming dynamite in a hole when at any moment it may explode, and you take him to task, it is

Note—From the published Proceedings of the sixth annual meeting of the Mine Inspectors' Institute, U. S. A., held at Birmingham, Ala., June 10-13, 1913.

reported to the local; and they use the threat, "We will fix his feet."

The inspector when he is elected is used as a tool to adjust matters where it is absolutely none of his business. He is at the mercy of both miners and operators. Operators are in a position to put money into the campaign to defeat him. I read an excellent article in COAL AGE recently on the evils in connection with the election of mine inspectors, and I hope that COAL AGE will continue to fight this law. I think I have covered the matter pretty well; but this currying favor with everybody in order to retain a position of responsibility is wrong. I hope the time will soon come when that part of the law will be eliminated from the statute books never to appear again. It is a step backward toward the dark ages. To bring the elective feature into the office of mine inspector, detracts from the dignity of the position.

You all know that as a rule the mine inspector is selected, not because of any political influence connected with the position, but because of some qualification that he possesses equal to or perhaps better than that of another man. It has been the case formerly, in Pennsylvania, that when a company wanted a man as a foreman they selected the best in the company; and when the state wanted a mine inspector, the very best man among the foremen or superintendents was selected; but today the shrewdest politician is the only person who can get the office; and to hold it for any length of time he must humble himself to some people whom otherwise he would consider beneath his notice.

REVISION OF ANTHRACITE MINE LAW

MR. DUNLOP (*Illinois*)—What has the present session of the legislature of Pennsylvania done with regard to eliminating the elective feature?

MR. RODERICK—I will say that the chief of the department of mines, at the session prior to the present one, had a Commission appointed to revise the mining laws of the anthracite region. This Commission consisted of nine people, and the chief of the department of mines was elected chairman. The Commission has now been working diligently, for 18 months, upon a new code of laws to cover the anthracite region of Pennsylvania. From that new code they hoped to eliminate the elective feature of the mine inspector. They also incorporated several good features to govern the mining of anthracite coal in the future. During the last decade, or twenty years, many great changes have taken place in the anthracite region. There has been installed much new electrical machinery, air compressors, electric motors, etc., etc. The Department of Mines went into that matter very thoroughly; they employed electrical engineers to give them an outline of what should be done to improve the conditions in the mines with respect to the installation of electrical machinery. Several other good features were inserted into that proposed law and the question of examinations as conducted under the present system, was amended, besides abolishing the elective feature from the laws.

Organized locals and officials of the Union went, in a body, to the House Committee in the legislature and demanded the enactment or the presentation of a code known as the minority code. The United Mine Workers combined to abolish the feature of the miners' examinations. We did not want it abolished, but amended so as to remove the danger of issuing certificates to incompetent people. There is always some hook or crook to get around the present law. There are three boards of examiners in Luzerne County, one in my district and two in the other districts of the county. The Commission wanted to insert a clause in the law providing that if a man came from the mining countries of Europe he might be given a year's advantage over another who comes from a country where there was no mining at all. In other words, men from England, Wales, Ireland or Scotland would only be required to work in the mines one year before being able to get a certificate to mine coal in Pennsylvania. But those coming from where they never mined coal, would have to stay in the mines two years, as they do now.

CERTIFICATION OF MINERS

One thing in connection with the present law the United Mine Workers did not want touched. The Commission was willing to draft a law and have it submitted to an attorney selected by the miners, with a view to making the Boards earn their salaries by the issuing of these certificates. Some may not understand the present method. The law says the members of the examining boards shall receive $3 per day for their services; but no part of their salary shall be taken from the state treasury. Now, if only nine people apply for certificates, you can rest assured the examining board will not turn one of them down.

The Commission wanted the boards appointed either as they are now, or by the Courts of Luzerne County, or by the governor of the state; and be allowed $5 per day and their expenses, but not to sit more than four days, which would remove any possibility of the Board accepting everyone who applied in order that they might not lose. We have not had the coöperation of the mine workers in carrying out this law. When the law hurts the operator, they are satisfied for us to investigate it; but if we take a miner to task for a violation of the law, they report the fact to the Union. Instead of upholding the mine inspector they say "Let, him go to the hot place." That is the condition under the elective system. I trust that that feature will be eliminated in whatever state it may exist.

MR. DUNLOP—What is the present condition of the two codes?

MR RODERICK—The position in which the two codes are, at the present time, is this: the minority code has passed the House with but one dissenting vote. The majority code lies in a pigeon hole at Harrisburg; but it is not likely that further action will be taken on either code this session.

MR. FLYNN (*Alabama*)—If a man fails to pass the examination, is the $1 fee returned to him?

MR. RODERICK—He does not pay the dollar until the certificate is given to him. The examination consists of 12 questions, asked in the English language. If he answers these questions successfully he pays his dollar and gets his certificate. It is not a hard matter to get a certificate; the law is very lax, and the Board is not expected to know everybody that comes before it. The territory in which my Board operates is about 25 miles long by 12 miles wide. Every applicant must have a man to vouch for him, although the Board may not know the applicant or the man who vouches for him. Often a man applies who never expects to use the certificate. Some slick duck or smart aleck who can answer the ques-

tions and understands the English language will apply and sell out to his fellow countryman for $5; but when he gives his name to the Board, he is careful to give the name of the friend for whom he wants the certificate. They traffic frequently in that business; they get the certificate for $1 and sell it to their friend for $5. You will see a man working in a mine and will wonder how he got a certificate; and the board will tell you they never issued a certificate to that particular man. There is a great deal of fraud in securing these certificates.

Election vs. Appointment in Illinois

Mr. Back (*Illinois*)—I am glad to hear these remarks of Mr. Roderick's, because we have had the same difficulty in Illinois this winter, except the miners wanted to make the term one year instead of two. We are at present under civil service. In December, a convention of the miners was called and they were to appoint delegates who should pick the men for inspectors. We found that pretty strong, but they laid down on it and we have been under civil service since July. Now, the man who is out stands a better chance to be appointed.

Mr. Bolt (*Illinois*)—During the last winter there was a bill introduced into the House in Illinois, calling for the election of state inspector of coal mines. The provisions were something as Mr. Back has stated, and some of the miners were in favor of the bill. I think many still favor the passage of the bill, but they are losing strength. It is being explained to others that are not quite so enthusiastic over the bill, showing its weakness and defects. I don't believe that a bill of the kind will ever be passed in the state of Illinois. No mine inspector or anyone connected with the mining business, unless it is a miner, would favor such a measure. It would tend to retard efficiency and to make the inspector responsible but to one element in the industry; and if he did not do what the mine workers demanded, he would be defeated. On the other hand, if he was willing to prostitute his manhood and do as they wish, he might be retained, provided he made no mistakes and was not recalled.

In Illinois, we are going to oppose such a bill first, last and always. We want to increase the efficiency of the mine-inspection service rather than do anything that would be a detriment to it; and I believe that Illinois has made as rapid progress in that direction as any state in the Union. At first, we had several members who did not care to enter the civil service and make out the required reports; but they finally concluded that, after all, it was the best thing to make full and complete reports. We have not heard any complaints for a long time along those lines, and we are getting better service in the way of mine inspection in Illinois than ever before. I think each member present will indorse that statement. I am opposed to the plan of electing mine inspectors. I would be opposed to it, even though it was made elective by districts for the reason that an inspector should not be called upon to devote his valuable time to going around soliciting votes. I am opposed to the plan of politics having anything to do with the work of mine inspection. A man who renders good service to the state should be permitted to continue in office provided his service as inspector continues efficient. The kind of inspectors we ought to have is men who take an interest not because of the wages, but because of the work. There is a good deal of honor connected with work where one can render service to his fellow men.

Mr. Dunlop—I will add a few words in as much as Mr. Bolt has mentioned the civil service. It is true that since the state inspectors have been brought under the civil service law, they have been required to give closer attention to business; and those who had been inspectors for 12 or 14 years before that law came into effect did not like reporting each day. But on the whole, the requirements of civil service are good and we will be able to tell you more about it a year hence. This is a year of trial in Illinois; we have had a change of administration and cannot say whether the civil service law is for the best or not. However, it makes the mine inspector work whether he wants to or not. If a man does not attend to his duties, and does not make out his reports, etc., as they should be made out, the civil service commission can say that his services are no longer required.

Mr. Beard (*New York*)—I am glad that Mr. Roderick has referred, in the words he has, to the question of the election of mine inspectors, in the anthracite region of Pennsylvania. I am not an inspector myself, but want to say that this is a very proper question for this body to discuss. Mr. Roderick has given, better than I could attempt to do, the evils that come from the elective system. I lived in Scranton, which is in the anthracite district, for six years previous to the enactment of the law requiring the election of mine inspectors, and for ten years after the law had been passed. The law was passed in 1901. Having been in close touch with the mine inspectors' work, as an outsider, I have watched with interest the working of the law in respect to this system.

Appointment of Inspectors by the Courts

Mr. Roderick has brought very clearly before you the evils that grow out of the elective system. I don't wish to dwell further on those points, because I believe that he has made them clearer than they could be made by anyone in my capacity. But, as one outside of the inspection service, I could afford to refer to a matter, in this connection, that perhaps you gentlemen would not like to mention, and that is how mine inspectors should be appointed, and how long they should serve. A mine inspector is a man who should be as far divorced from any influence that would trammel him in his work, as possible. You know, gentlemen, there are laws that govern all natural conditions, and much the same laws control our physical work. A man who is under any influence that would trammel him in his work is obstructed in that work; just as we can obstruct the flow of air in an airway or through a mine. It is not necessary to argue the question. The main point is how can we secure the appointment of the mine inspector in such a manner as to divest him of any influence that would embarrass him in the performance of his official duties.

After carefully considering these questions, in my own mind, I have come to the conclusion, from an experience of six years as secretary of the examining board for mine inspectors, in Iowa, and from my observation in the anthracite region of Pennsylvania, that the mine inspector should be appointed on some other basis, as far removed from politics as possible. We may say there is no appointive power that would be exempt from undue influence from political sources. The only appointive power that we can go back to with any confidence is the

judiciary, as represented by the Courts. Courts are not entirely exempt from intrigue; some of our Courts are corrupt. But I believe, gentlemen, and I think you will agree with me, that the Courts are the only power that is exempt, in a measure, from such undue influence. I would put it this way: They are the power most exempt from ultra influences. If, then, the mine inspector could be appointed on some judiciary basis, through the courts, after undergoing the examination and showing his ability to serve in that office—if that could be done—I believe that it would be a step in the right direction.

I believe, further, that when a mine inspector has once been appointed that his tenure of office should extend through good behavior; I might say through life, with the possibility of recall, by the same appointive power that put him in office. No man is perfect; mine inspectors are not perfect; we have evidence of that; and we should not put a man in office for life, but during good behavior. The point is this: When a mine inspector has spent five, ten, fifteen or twenty years in the service, he knows better what is required in his particular district and in those mines, than a new man who comes up for appointment or for election, as the case may be. The old mine inspector has adopted a system along the lines that have appealed to him; he has become familiar with the men in his district; he may have his enemies, of course; but if he is beyond the power of those enemies to do him harm, then he can do his work, and he will be a power in the up-lift of mining and in the development of safety. There is no question about that, in my mind, gentlemen.

I want to thank Mr. Roderick for his reference to what COAL AGE has attempted and to assure him and you gentlemen, that COAL AGE expects to continue that work. We have under consideration not only the appointment of mine inspectors, which we will continue to push until we can see some results, but other points, besides, that I believe will help to uplift and broaden the work of mine inspectors, in this country. One of the points to which I refer has been thrashed out, in COAL AGE, recently, in respect to what is required in mining examinations, particularly; and we were snowed under with just what I supposed would come. However, we want to submit these questions for discussion, in such a manner that everyone will feel free to say what they think is right, and to argue the question from their own standpoint. Now, my opinion is only worth so much—your opinion is worth the same; but when you put these opinions against each other, and let each stand for what it is worth, a great deal is accomplished in broadening our ideas. * * *

These suggestions are not made hurriedly, but are the results of careful study and observation. While, for the past 18 years I have gone deeply into the theory of mining, my work for 19 years previous to that was spent in engineering and mining work. I have held every position in the mine and performed every task, except driving and digging; and the practical knowledge so gained has been a great help to me in studying mining questions, from a theoretical standpoint. My heart always goes out to the candidate who is a good practical man but has not learned much of the theory of mining; and I have tried to simplify for such, as far as possible, the question of what should be required of candidates in examination, in order to secure the best men for the positions of inspector, mine foreman and fireboss. While we cannot make a difficult thing easy, we can often simplify the matter, by putting the candidate under conditions with which he is familiar and to which he is accustomed in daily practice.

The work of making the examination more practical must be undertaken by degrees. In some of the states, the conditions surrounding the mining of coal are not such as to permit of a difficult examination being given candidates for the positions of mine foreman and fireboss. In every state, the examination must be adapted to the existing conditions. Where this has been done, in some cases, it has resulted in a shortage of men to fill the position of mine foreman, and it has even been necessary to allow an uncertificated man to fill the position temporarily.

MR. PAUL (*Pennsylvania*)—The question of selecting state mine inspectors is one of great importance, since the efficiency of the service to be rendered may be seriously impaired if the inspector becomes the tool of either wire pullers or mine operators, and, as a result, unduly compromises himself in the proper execution of the law. The qualifications should be capability, efficiency and aggression on the part of the inspector. While it is almost an impossibility to provide a means of selecting inspectors without the influence of some political or state governmental organization, the plan adopted should be such as to remove the inspector from such political influences, at least so far as his retention in the service is concerned. The election of inspectors appears to me to be a most unwise method of selection, especially if their tenure of office is such as to necessitate their frequent participation in political campaigns, in an endeavor to secure reelection. The sentiment of this Institute appears to be strongly opposed to the elective system, so it would appear that it would be proper for the Institute to take some action in the form of a resolution which will place the Institute on record as condemning the elective plan of selecting mine inspectors.

As a result of the discussion the Institute adopted the following:

RESOLUTION

Following an interesting and prolonged discussion of the methods employed in different states, for the selection of mine inspectors, the Mine Inspectors' Institute, U. S. A., in session June 11, 1913, at Birmingham, Ala., unanimously adopted the following:

Resolved—That in view of the nature of the duties imposed by law upon the state mine inspector, requiring him to act as agent for the state; and because the upright and conscientious performance of those duties often calls for the fearless, unprejudiced and unhampered exercise of an inspector's best judgment and convictions, in the face of threatening opposition of either operators or miners or both: Therefore be it

Resolved—That it is the sense and deliberate opinion of the members of this Institute, that the incumbent of the office of state mine inspector should be, as far as possible, removed from any influence that would tend to warp his judgment, or embarrass his conclusions, or in any manner delay his action in the interest of safety and security of mining operations under his direct supervision; and further,

Resolved—That, in securing this end, it is the unqualified opinion of this body that the elective system as applied to the selection of state mine inspectors should be condemned unreservedly and abolished. In conclusion be it further,

Resolved—That due publicity be given this action by wide-spread notice in the public press and mining journals, so as to bring it prominently before state legislators and governors, in the hope that such laws may be wiped from the statute books where they exist in any state, or may be killed if contemplated.

All mine inspectors are earnestly requested to draw the attention of the governor in their respective states to the above resolution.

POWER DEPARTMENT

Long-Distance Steam Transmission

By F. W. Brady*

SYNOPSIS—Long steam pipe lines are still extensively employed in the anthracite region. Many of the engineering problems encountered and solved in an installation of this kind are here enumerated and illustrated.

Out-door steam pipe lines are a common feature of the landscape in the anthracite mining district of northeastern Pennsylvania. Some of these lines being poorly constructed and proportioned for the purpose in hand result in a considerable loss of power with more or less unsatisfactory service. Others are of first-class construction, are kept in good repair, and their use appears to give satisfaction.

These long steam pipe lines in most cases continue to fulfill the needs of the anthracite field, and have not been generally replaced by electrical transmission to any extent. They are not considered relics of old-time mining plants where the system has been always used as a matter of course, but are features of the newest construction work.

The accompanying illustrations and sketches show two high-pressure steam pipe lines that are just being completed for the Harleigh-Brookwod Coal Co. by the Gaylord Engineering & Construction Co., W. H. Gaylord, Jr., consulting engineer. These lines are remarkable for their length, high-grade construction, and the numerous difficult engineering problems which were successfully solved in carrying out the power scheme.

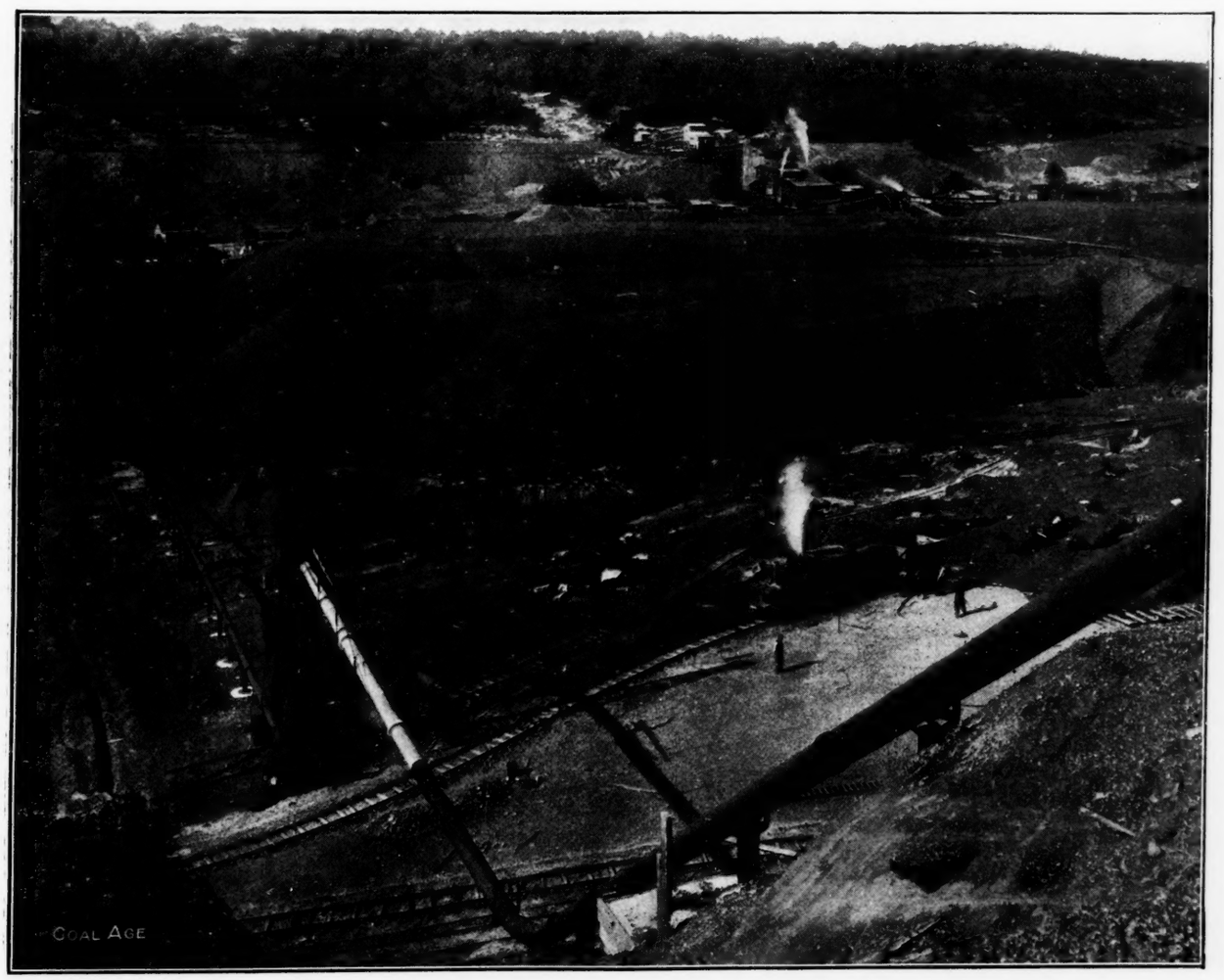


Fig. 1. General View of 10-In. Line 4300 Ft. Long

The pipes are 10 in. in diameter, and are designed for a boiler pressure of 175 lb. per sq.in. One line is 4300

*609 Gibson St., Scranton, Penn.

ft. long with 8-in. and 6-in. additional distributing pipes 1400 ft. long, and the other line is 7300 ft. in length. A general view of the 4300-ft. line is shown in Fig. 1, while Fig. 2 is a plan of the various lines and gives the location of the different shafts, breakers, etc., while Fig. 3 is a view along the 7300-ft. line.

The purpose of the installation was to do away with ten separate boiler plants, which were more or less out of date, and much in need of repairs. The power is used for pumping, hoisting and breaker operation at several different mines.

Provisions That Must Be Made

In the construction of these pipe lines it was necessary to provide for a large amount of expansion, to prevent

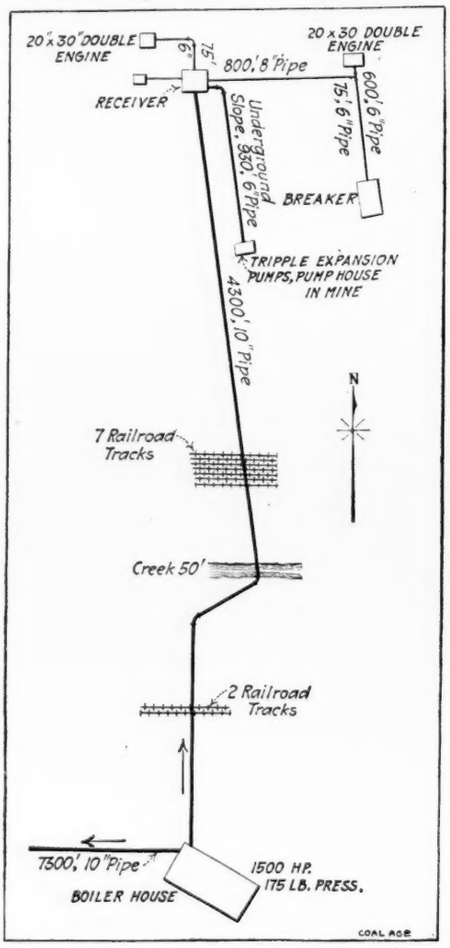


Fig. 2. Plan of One of the Pipe Lines

so far as possible undue condensation, and to provide means for removing the steam condensed, and for keeping the pipes in alignment on the irregularities of the mountain sides over which they were laid, for anchoring the pipes on the steep slopes and for elevating them where they crossed streams or the tracks of railroads.

It was also necessary to prevent vibration of the pipe caused from the operation of the quick-acting throttle valves on some of the engines.

The 10-in. pipe employed is of the best quality of steel, weighing 40 lb. per ft. It is rolled in 40-ft. lengths and connected with Van Stone joints having extra heavy steel hubs and flanges. No threaded pipe is employed in the entire system. A triple copper gasket with red lead between joints is used in each flange connection, the joint being set up tight when cold.

Referring to Fig. 1, which is a view looking from the boiler plant, it will be seen that the 4300-ft. line drops into a valley about 150 ft. below the boilers, at the farther side of which it rises in the woods to a higher elevation than the boilers themselves. The extreme end of the transmission is at the coal breaker, which may be seen in the edge of the woods.

Fig. 4 shows the construction on the steep hill side next to the boiler plant, together with the form of steel tower used to carry the pipe over the railroad tracks. These towers have two sheave wheels over which pass cables that are anchored to the pipe forming a suspension bridge scheme of support. The double-tower suspension, where the pipe line crosses the seven tracks of the Pennsylvania and Philadelphia & Reading Rys., is shown in Fig. 5.

The terminal of the 10-in. line, the receiver and the four distributing pipes are shown in Fig. 6. The receiver, which is 4x15 ft., has welded necks with Van Stone

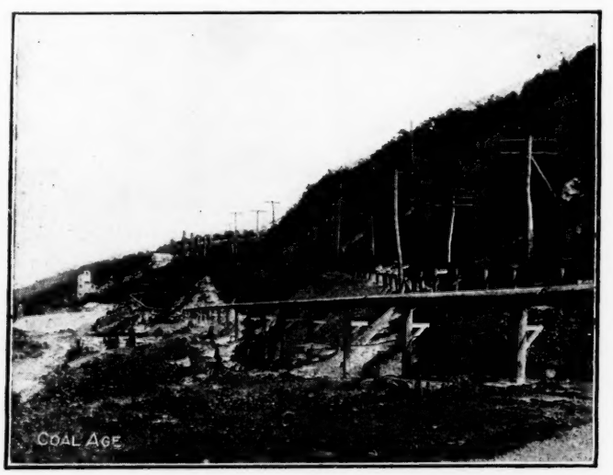


Fig. 3. View along 7300-Ft. Line

flange joints for the pipe connections. Besides serving as a water collector the receiver acts as a regulator, preventing vibration in the 10-in. line from the quick action of the throttles on the engines above mentioned. An 8-in. feeder line weighing 28 lb. per ft. leads down a slope 930 ft. underground to a pumping station. Triple-expansion pumps are here installed to remove the water which has an estimated daily accumulation of 2,000,000 gal. The breaker at the extreme end of the 1400-ft. feeder is the farthest of any plant from the boiler house upon this line.

Swivel Joints Take Up Expansion

Expansion is taken care of by vertical and horizontal swivel joints as shown in Fig. 7. The details of the joints are shown in Fig. 8 and the flexible support for the pipes near them in Fig. 9. The special feature of the swivel is its 3 in. of longitudinal space for ring packing. This keeps tight while the ordinary style with only 1 in. space requires frequent renewal and constant care. The flexible hangers are made of 2½-in. pipe set in concrete foundations. There are four different arrangements of swivels used in the line so as to accommodate the deflection of the pipe at various angles in both the vertical and horizontal planes.

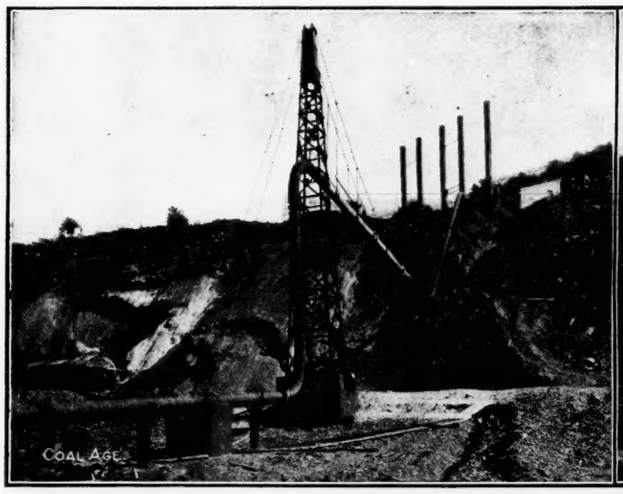


FIG. 4. POWER PLANT AND CONSTRUCTION ON STEEP HILLSIDE

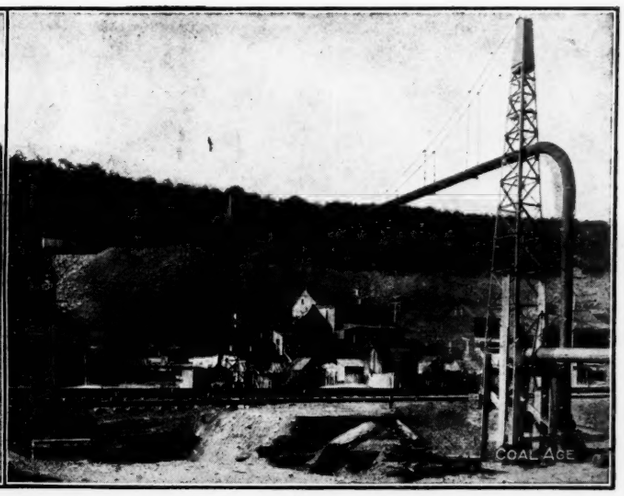


FIG. 5. SUSPENSION TOWERS CARRYING PIPE OVER RAILWAY TRACKS

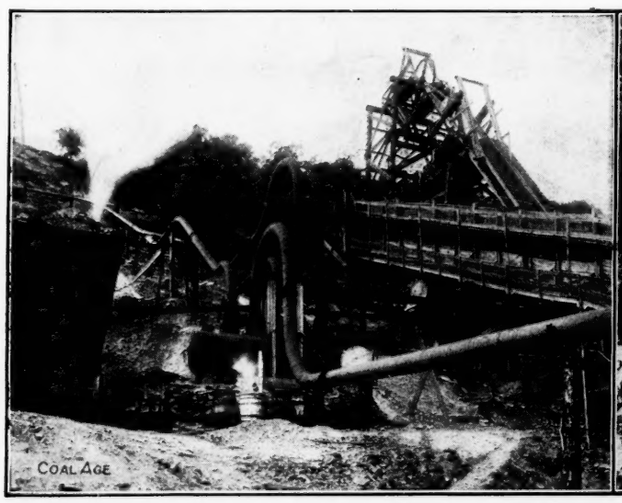


FIG. 6. THE STEAM RECEIVER AND ITS CONNECTIONS

FIG. 7. ONE OF THE EXPANSION JOINTS AND FLEXIBLE SUPPORTS

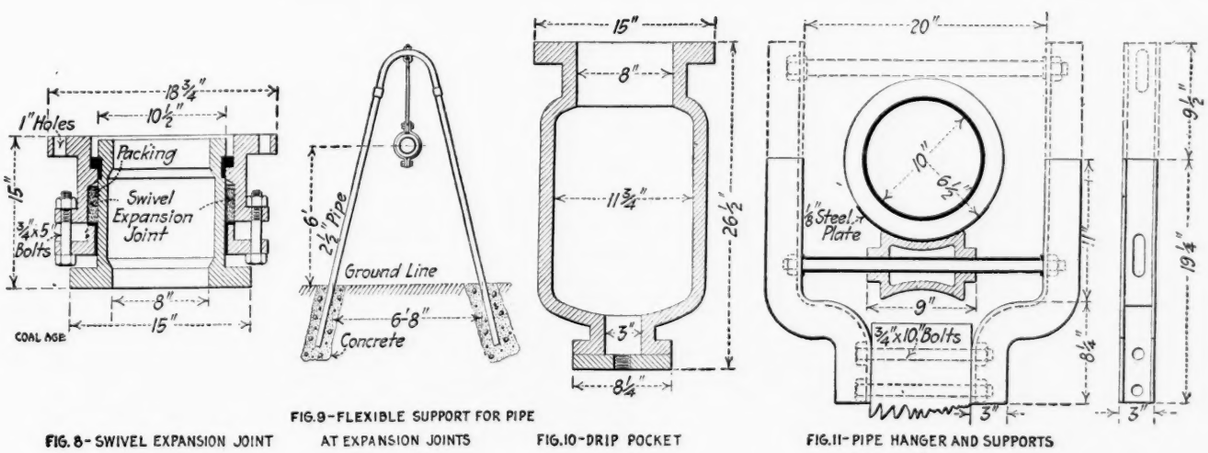


FIG. 8-SWIVEL EXPANSION JOINT

FIG. 9-FLEXIBLE SUPPORT FOR PIPE AT EXPANSION JOINTS

FIG. 10-DRIP POCKET

FIG. 11-PIPE HANGER AND SUPPORTS

FIGS. 8, 9, 10 AND 11. DETAILS OF THE PIPE-LINE CONSTRUCTION

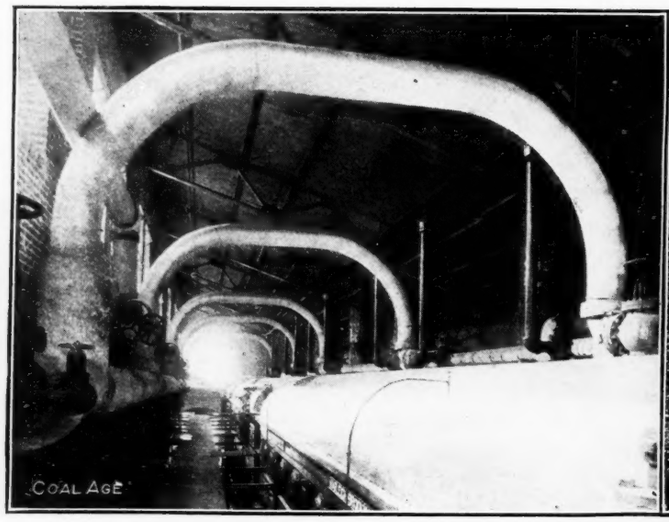


FIG. 12. STEAM HEADER AND ITS CONNECTIONS IN BOILER PLANT

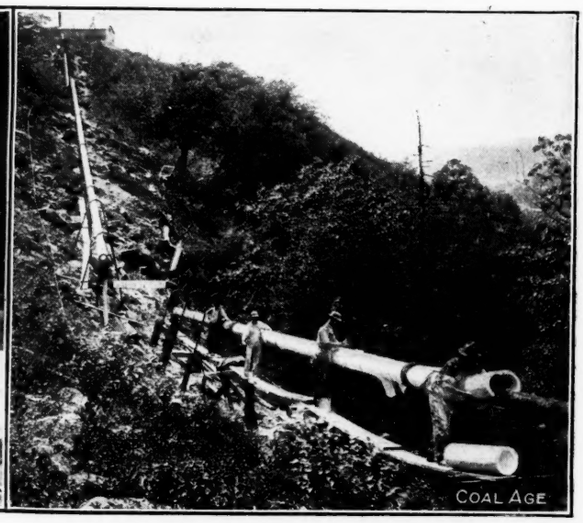


FIG. 13. PLACING THE COVERING ON ONE OF THE 10-IN. LINES

Under the drop or downcomer at each swivel joint there is a drip pocket which is shown in detail in Fig. 10. The special feature of these drips is the large opening in the bottom, which is covered with a flange having the usual plug connection. This construction allows the drip to be cleaned thoroughly by removing the flange, the outlet of the ordinary form of drip usually clogging.

The regular supports and hangers along the line are shown in the several photographs and in detail in Fig. 11. They are made of 8x8-in. posts set in molded concrete foundations. This plan made the work of erection easy and promises that changes and repairs can be made with equal ease in the future. The yoke is made of 3-in. channels fastened to the top of the post with two ¾-in bolts, the pipe rests on a 3½-in. curved roller having a radius of 6½ in. This roller is fitted over a sleeve made of ¾-in. pipe, which is carried on a ¾-in. bolt. Every fourth support is double-decked as shown by the dotted line, so that a ¾-in. bolt can be passed over the top of the pipe. Special designs of brackets are used where the pipe must be supported on the side of the post.

A view inside the boiler plant is shown in Fig. 12. Here are installed five 300-hp. water-tube boilers set in battery and half battery, making 1500 hp. in all. The steam header is carried along the wall. It has welded necks with extra-heavy steel flanges for each boiler connection. Each steam feeder has a Jenkins stop and check valve at the boiler and a Best gate valve with bypass at the header. As above stated, the pressure carried is 175 lb.

THE PIPE IS CAREFULLY COVERED

The insulation or covering of such long steam lines is an extremely important matter. The placing of this covering near the end of the 7300-ft. pipe line is shown in Fig. 13. It is made up as follows: 1½ in. of 85% magnesia, a cloth jacket, two layers of rosinized paper, 1 in. of hair felt, one layer of rosinized paper, and two thicknesses of weatherproofing, together with the various bands, wires, etc., required to bind this material firmly together, and about the pipe.

It may be seen, therefore, from the foregoing that steam transmission is not invariably discarded in favor of electricity in the anthracite region, that the many difficult problems of leading the pipe line across country, over streams and railroad tracks, providing for expansion and contraction, removing what small amount of water necessarily condenses from the steam, and holding this condensation to a minimum by means of a suitable pipe covering, are all problems which, in the case described above, have been successfully solved.

❋

When to Cut Timber

BY ERNEST L. BAILEY*

It seems probable that few mine managers appreciate the importance of having their mine timbers cut during the season of little or no sap, that is, from approximately the middle of December to the middle of February. This, of course, applies only to entry timbers or to those for which a long life is desired.

Dry rot is by far the most prevalent of any timber disease obtaining inside the mine workings, and not only is it the most common, but, once infected, there is no efficacious treatment for the diseased stick.

Dry rot is produced by the fermentation of the sap in improperly seasoned timber, beginning at the center and working toward the surface. Timber cut during the no-sap season and subjected inside the mine to even a slight air circulation is rarely affected.

The elimination of dry rot is even more desirable from a safety than from an economical viewpoint. The surface of the stick being the last part to be affected, an almost wholly decayed timber may present to the eye a perfectly sound appearance, thus giving the workmen, and frequently, no doubt, the foreman, a false sense of security, which has unquestionably been an important contributing factor in many fatal accidents.

The manager who now has his foreman prepare an estimate of the permanent timbers to be used during the coming year and orders the woodsmen to cut and store them in the proper season, will be taking steps to ultimately reduce his cost of timbering and also to safeguard the lives of his employees.

*Mining engineer, Crumpler, W. Va.

EDITORIALS

Two Phases of the Colorado Strike

"Life, liberty and the pursuit of happiness" are the inherent rights of all who live, dwell or sojourn within the confines of the United States. It would appear to be ridiculous that the miners of Colorado should declare, as one of the contentions for which their strike has been called, the right to board where they please, to buy their necessities or superfluities where and from whom it may suit their fancy. These are rights supposedly inalienable.

Another point for which it should be utterly unnecessary for the mine workers to contend is the enforcement of the laws of the state regarding mine inspection and hours of work. These are matters which primarily concern those who are intrusted with the enforcement of the statutes.

While the contentions of the mine workers cast insinuations upon both the executive branch of the state government and the business system of the operators, many of their methods in conducting the strike are highly reprehensible, as is evidenced by the recent findings of the Grand Jury. This body in returning indictments against the strike leaders, charging them with conspiracy to monopolize labor, has made some pointed remarks concerning the importation of experienced or professional agitators, the furnishing of arms and ammunition to "irresponsible aliens," and the employment of methods "which all fair-minded labor organizations repudiate." One of the local labor leaders admitted under oath that he had personally given weapons to the miners at one of the tent colonies, many of whom were at the time drunk and insisted upon immediately attacking the watchmen employed by the operators.

In arming foreigners unacquainted with our laws or customs, and whose idea of all government is that of a monarchy, these labor leaders launch a force, the amount and direction of which they admit they are unable to control. Under such circumstances, they should not be surprised at any far-reaching results which may follow. Almost anyone can kindle a fire; it may require several engine crews to extinguish the resulting conflagration.

Coal Age
Wishes Everyone a
Merry Christmas

The West Virginia Coal Mining Institute

The struggles and the strifes of West Virginia have been a matter of recent national history, and most of what the public heard relative to those ugly occurrences came through Charleston, W. Va. The quarrel is far from settled; the men in one camp have already broken their agreement and are seeking a new one, and everyone expects a recurrence of violence.

Yet a trip to Charleston to a meeting of the operating forces in an institute assembled revealed no sign of any apprehensions or festering animosities. Most creditable to the executive heads of West Virginia is it that despite a continued outburst of public condemnation, misrepresentation and scandal, there is now little sign of anger or retaliation. One compares with wonder the quiet of the meeting in the Y. M. C. A. building at Charleston, with the orgy of hate, violence and malice at Carnegie Hall, New York City, when that Jones woman, interesting and clever, preached her story of discord.

Mrs. Jones—we will not dignify her with the title she assumes, "Mother Jones"—and her followers have failed to disturb the serenity and determination of the West Virginia operators. While she has talked guns, they are discussing schools and seeking to do their whole duty to their employees. The future will record the success of the West Virginia operators in suppressing disorder.

There is no other way of winning back the state to public confidence, and it is pleasing to see that the operators have chosen it. In all the papers and discussions not one word was said which would have brought a smile or caused a frown to gather on the face of any mine worker. The favorable audience which Dr. Ira D. Shaw, of the Y. M. C. A., received and the prolonged applause when the prohibition amendment to the constitution was but casually mentioned shows that the West Virginia operators are determined to remake the state and set it right.

But from these quiet men, one turns uneasily to those unquiet souls, probably just as determined to seek the right as they have light to see it and know it as the operators. The need is great to establish in them a degree of character that will make such scenes of violence, as West Virginia has recently witnessed, impossible. Can this ever be done by inciting each and every man to be a mine official, a foreman or a superintendent? A propaganda of education which urges every man to seek to dominate his peers is ill-suited to this 20th century.

The duty of creating a desire for comfortable, clean and happy homes, good citizenship, thrift, sanitation, wholesome cooking, sobriety, decent living, first aid, rescue work and like matters, is indicated by all the symptoms of the West Virginia unrest. Let no one decry ambition, but if a man is willing to continue to be a miner and make more money than his foreman, why urge him to change? Teach him track laying, coal shooting, timbering, safety, economy and efficiency in mining, so that he can earn for himself and society a better living. It is a fact that he will be more adequately rewarded and find life easier if he remains a miner and does not put himself where the state, the operator, and the employee can combine by their reproaches to make life unendurable.

In England today the county councils' lecturers are teaching hygiene in every village. In any coal camp it would be better to teach that science than the hydrau-

lies of mining. We rejoice to hear that Anna B. Scott has been teaching simple cooking in the Winding Gulf section, and inculcating culinary economy to the native miners' wives. The lessons, simple and fundamental, have had remarkable results. The miners in the mountains of West Virginia have hitherto not only been served with poorly cooked food, but the work has been done in the most wasteful way and Mrs. Scott has set herself to meet the difficulty in a practical manner.

The mountaineer needs much development, and some at least of the operators seem decided he shall have it. We hope that they will conclude not to develop only those who have a facility for mathematics and other book learning, but will seek to extract the best from every man and every woman in the community. If we desire juries to be just, if we would replace politicians with statesmen, if we seek to make union officials serve the best interests of their men, if we would have reason and efficiency at our mines, we must create character. When the laws are inefficient and flouted, where anarchy rules, there the need for ideals and self-constraint is most felt and unhappy is the operator who meets force with force and has not learned the more American method, education.

❋

The Greatest Cause of Mine Accidents

In mining, as in many other industries, the vast majority of fatal accidents occur from one or more of three causes, ignorance, indifference, disobedience.

Many of our mine workers, being more or less inexperienced are often downrightly ignorant of dangerous conditions. Others, even though experienced, and thoroughly realizing that they are in danger, evince a strong spirit to put off "until a more convenient season" the time of making adequate provision against a known risk.

The third class are those who tacitly disobey the instructions of their superiors. When told to take down a certain piece of slate or to set a prop in a certain locality, these men finish loading a car or cleaning up a place before proceeding, perhaps leisurely, to carry out instructions, or they may even leave the mine without performing the duty at all.

One of the best methods that has hitherto been devised for forestalling these evils is the appointment of a sufficient number of subforemen so that each may have only a limited number of men under his care. This number, of course, varies with the conditions and layout of the mine, but should be such that he can visit each working place every few hours.

These assistant mine foremen are to a large degree safety specialists. When a dangerous condition is discovered, it is the duty of the subforeman in whose district it occurs, not only to instruct the miners to rectify the condition, but to remain and see for himself that his instructions are immediately and implicitly obeyed.

It is at once apparent that so long as human nature remains human nature, all accidents can by no means be eliminated either in mining or any other industry. Strive as we may for a clear accident record, we will still be confronted by lapses of discipline which result fatally. The fact remains, however, that the above system, where it has been adopted and conscientiously followed, has been extremely fruitful in reducing accidents. One firm, of which we have knowledge, has succeeded in reducing accidents upon a tonnage basis by means of this system somewhat over 60 per cent.

Great as have been the strides toward safety accomplished by this system, however, fully one-half of the accidents still occurring in this firm's operations are due to lapses of discipline, to the apparently irresistible tendency of all underground workers to procrastinate, to gamble with fate and take a chance.

❋

The "Mine Workers" and Their Contracts

The United Mine Workers of America has proved beyond doubt that as an organization it is a body without responsibility. By countenancing the continued violation of labor contracts with the anthracite and bituminous operators in Pennsylvania, the officers of the "Miners' Union" have made a most serious mistake, and one that reflects on their honor and sincerity, as well as their business judgment.

For more than a year the anthracite-coal companies have remonstrated in vain against the many serious "button strikes" in the hard-coal region. It has been left to the bituminous operators of central Pennsylvania, however, to call for a show-down, which is done in their 10-day ultimatum published on p. 929.

In such matters as this, public opinion will always ultimately control and determine the issue, and as a consequence, there can be no doubt of the outcome. All fair-minded people are certain to protest against the attempt of the miners' organization to make contracts and immediately thereafter repudiate all that is binding in their part of the agreement.

We believe in labor unions, and we are sure that, when properly conducted, such organizations are beneficial to society as a whole. It is also proper that those who represent a body of workmen in any industry should conclude the very best bargain in the matter of wage agreements that it is possible for them to obtain. But when such a contract is finally made, there should be no violation of its terms.

The present policy of the "Miners' Union" is one of which they should be ashamed. They are striking at the heart of their own organization. Mr. White, Mr. Gilday and other union officials will have nobody but themselves to blame if their present dishonorable plan of procedure proves disastrous to the campaign of organized labor in the coal industry. No social movement can succeed unless based on justice.

❋

May the Pot Call the Kettle Black?

The Delaware, Lackawanna & Western R.R. Co. was recently compelled to pay a fine for having committed the legal misdemeanor of hauling its own hay over its own railroad in order to feed its own mules in its own mines.

Provided that the present agitation for a Government railroad and mines in Alaska is successful, and that the road is finally built, and the mines opened, it would be interesting to know in what light the courts will view the action of the Government in transporting its own coal produced in its own mines, over its own railroad, to supply its own Navy.

SOCIOLOGICAL DEPARTMENT

How Breathing Apparatus Works

SYNOPSIS—An elementary and detailed explanation of the manner in which the Westfalia apparatus is constructed and how it works.

The purpose of artificial-breathing apparatus is (1) to supply the wearer with oxygen and (2) to absorb the carbon dioxide and moisture which he exhales. These two requirements fulfilled, he can safely penetrate any area containing an unbreathable atmosphere. These needs are met by the Westfalia apparatus by (1) cylinders filled with oxygen, the supply from which is regulated by a reducing valve; (2) breathing bags large enough to regulate by their capacity the supply to and the discharge from the lungs; and (3) a metal container filled with chemicals for the absorption of carbon dioxide and moisture.

Rubber Parts in Front, Metal Parts in Rear

The apparatus is distributed on the front and back of the rescueman; that part which is of rubber is placed in front for better protection, and the metal parts, such as the oxygen cylinders and the regenerator, are placed behind. The hose pipes protected by wire reinforcement are all in front or under one arm. All the pipes on the back are of metal.

In the diagram, to make matters plain, the parts worn in front are placed on the left, the parts under the arm in the center and those worn on the back on the right. The breathing bag has been represented as cut open, so as to show the hose pipes which pass into it by air-tight connections. The only other parts in section are the regenerator and injector. It should also be stated in passing that what we shall call the left-hand compartment of the breathing bag is that to the left hand of the wearer and appears as the right-hand compartment in the diagram.

The Course of the Air and Its Purifying and Enrichment

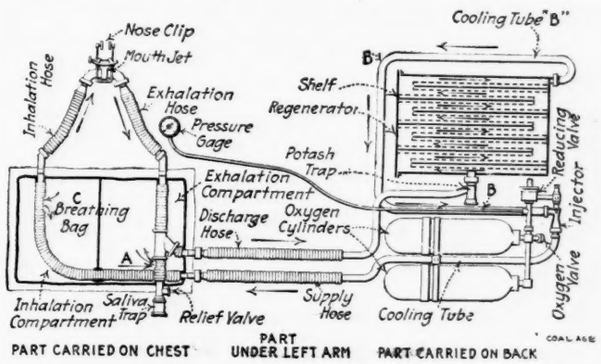
The illustration shows the circulating system of the air and oxygen in the Westfalia apparatus. The air which the rescueman discharges from his lungs goes through the exhalation pipe in front of his body into the left-hand compartment of the big breathing bag, which he carries on his chest. It passes into this bag, but the pipe is unbroken except for a slit *A*. If the air is entirely unobstructed, all of it goes forward into the discharge hose, which is passed under his left arm to the back of his body.

If, however, the air exhaled does not pass away immediately, as is always the case when the rescueman is making a full breath, some passes through the slot *A* into the exhalation compartment of the breathing bag and is stored up so that when the man is inhaling, this air can still continue to pass on. Why it is necessary to have this bag and why it is not connected to the air line with valves will be explained later.

We have traced the air into the discharge hose, by which it passes under the left arm of the rescueman at a point near his waist. It is then carried to the regenerator on the upper part of the man's back and circulates back and forth till it reaches the top of the regenerator, its moisture and carbon dioxide being absorbed by the potash on the various "shelves." It then passes, by a cooling pipe *B*, over and alongside the regenerator and then below it to the injector.

The Injector

This injector is just like a steam inspirator, with this sole difference that oxygen is used to do the injecting. A small jet of oxygen is passed through a passage, which



Diagrammatic Illustration of Westfalia Breathing Apparatus

gradually narrows and then widens out to the full diameter. The speed with which this oxygen travels into this narrow space causes the purified air to enter the narrow pipeway and then drives the air now both purified and enriched with oxygen back through a pipe between the two cylinders of oxygen to the flexible supply hose, which passes under the left arm into the right or inhalation compartment of the breathing bag.

This pipe passes through the exhalation compartment on its way, but is air-tight in this part of its course. When it reaches the inhalation bag it is slit at *C*, and the air can pass right on to the rescueman's lungs if he is drawing in air, but if he is compressing his lungs, the air will go into the breathing bag and be stored up there until he is ready to draw it in. Then the air will return into the slot *C* and proceed by the inhalation pipe to his lungs.

The Oxygen Cylinders

In this manner the air passes continuously round in a circuit, being purified by the potash and oxygenated by the gas escaping in due proportion from the oxygen cylinders. Two of these are used so that the weight is distributed more evenly on the back than it would be if only one large one were installed.

Nevertheless, one cylinder is not exhausted before the other is emptied, but oxygen from both these cylinders is

used at the same time and the pressure is measured by one and the same pressure gage. The oxygen is maintained at a pressure of 120 atmospheres, or 1733 lb. A single automatic reducing valve serves for both cylinders and is so arranged that the injector jet can be inspected without removing the valve from the apparatus. As the 120-atmosphere charge is sufficient for two hours, each atmosphere furnishes enough air for one minute, and the pressure gage is graduated according to that principle.

Oxygen Is Purified by Three Filters and Pressure Is Reduced to 72 Lb.

In passing from the cylinders to the reducing valve the oxygen is filtered through three sets of gauzes and felt washers so that it is impossible for any dirt or impurities to enter and clog the injector, so long as these gauzes are kept intact. The reducing valve makes a reduction in the pressure to about 5 atmospheres, or 72 lb., and is so arranged that even when the pressure in the cylinders drops down to 8 atmospheres, the pressure of the escaping oxygen is nevertheless still the same.

This oxygen flows through an extremely small nozzle, and being at the pressure described, has considerable velocity, which is utilized to promote circulation through the apparatus. The nozzle projects slightly into the trumpet-shaped opening forming an injector. The oxygen passed by the apparatus is 60 liters, or 2.1 cu.ft. per min.

The Breathing Bag

The inhalation compartment of the breathing bag stores up air ready for the deep breath or for extra demand in case of more than ordinary exertion. The bag is, in short, the regulator which turns an alternate action into a continuous one. The inflation and contraction of the lungs are reciprocating actions, and to supply and receive the air from these pulsations by a continuously working apparatus, a storage chamber is necessary, and the breathing bag serves that purpose just as does the air reservoir on a water pump.

The supply and discharge tubes, as has been said, are both connected at the bottom of the breathing bag on the left side. This obviates the need of making any connection in the apparatus after it is put on and also allows each man to examine and test the complete circulation of his own apparatus.

Why Hose Pipes Pass through the Breathing Bag

It has been noticed in this article that the hose pipes pass through the breathing bag. The advantage of this arrangement is that even if the rescueman lies down on the bag the air will not be entirely shut off and the bag will be held open so that it will have some available capacity. The man will still be able to breath freely despite his prone position. The breathing bag serves as a storage reservoir at all times; the exhalation compartment fills up and gives a steady supply of foul air to the regenerator for purification. The breathing bag is protected from being torn or cut by means of a leather cover, which is attached with straps and swivels to the shoulder straps and back carriage and is sufficiently free to allow unrestricted expansion.

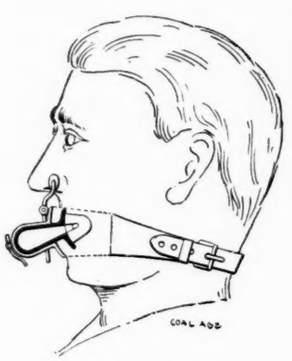
By having the hose pipes within the breathing bag the connection between them and the bag is made more simple and no valves are required. The arrangement works, therefore, without unnecessary loss of power.

The hose which connects the breathing bag with the face piece is made extremely flexible and can be quickly put on, as it is only necessary to fit the helmet on the head or place the mouth piece in the mouth and screw up the nose clip to be ready for instant service. This ability to put on the apparatus rapidly is of considerable importance in an emergency.

The Regenerator

The regenerator, as has been said, has "shelves," but the potash is placed both above and below them, being held in place by wire gauze. This gives the material a large area of contact with the circulating current.

Where the regenerator has been roughly handled or sent by train or motor car without proper packing, minute particles of the chemical will occasionally sift out of the wire cages and fall into the bottom of the regenerator. In order to prevent this dust from blocking the air entering the potash cartridge, a trap has been fitted to the pipe, by which the air is conveyed. The regenerator can be quickly exchanged or refilled, either the interchangeable or refillable type being furnished, as may be desired.



The Face Piece

The Oxygen Gage

The gage is carried just below the left shoulder in a leather case, forming a part of the harness. By unbuttoning a flap the gage can be taken in the hand and examined. The oxygen is carried from the cylinders to this gage by a small, heavily armored rubber tube passing under the left arm. It is well protected by the apparatus where it crosses the back, and, as it passes closely under the arm pit, it cannot catch in obstructions.

Many authorities believe that pressure gages should be kept close to the oxygen cylinders, feeling that flexible tubes are undesirable as conductors of any fluid at pressures of 1733 lb. When carried on the back the pressure gage can be placed below the regenerator and above the oxygen cylinders, so as to receive the protection of both. The makers of the Westfalia apparatus are quite willing to provide such an arrangement, as they believe the argument is in favor of this location for the gage. When set at the back, it is placed in a metal framework, the front being adequately protected by a metal shield.

There is this strong argument in favor of the rearward position. Rescuemen never travel into a mine alone, so it is easy for each rescueman to watch the gage on the back of his comrade. However, most users of apparatus would feel better satisfied if they could read the record of their own pressure.

Why the Air Circuit Never Reverses

There are no valves in the system, but rebreathing any of the exhaled air until it has passed through the regenerators, is impossible. Yet this result is obtained without the use of valves in the air passages. Such valves are

apt to become choked with saliva, especially when the mouth-breathing apparatus is used.

There is always a higher pressure in the inhalation than in the exhalation pipe, so that when the rescueman expires air, it goes to the pipe with the lower pressure, namely, the exhalation pipe, and when he draws his breath, the air inspired comes from the pipe which is at higher pressure, to wit, the inhalation pipe. The injector thus determines the direction of flow, so that it is impossible to reverse the circuit.

The connections between the regenerator and the breathing bag on the purified-air end are quite lengthy. This is done to cool the air heated by the chemical actions taking place in the regenerator.

Domestic Science in Mine Camps

Mrs. M. B. Scott, of Philadelphia, Penn., a famous culinary expert, has been teaching cookery at the little town of Tams, Raleigh County, W. Va. She was introduced by an officer of the mining company and declared she could make a good dinner for 4 men for 50c.

Four men were chosen having exceptional appetites. The meal opened with a beef stew, the meat of which cost 18c. As potatoes were expensive, Mrs. Scott replaced them by dumplings, at 4c., including parsley and other seasoning. A soup of stock cost 3c. and a can of peas 6c. For dessert, Indian pudding was served, at a cost of 5c. and the coffee for the four men cost 7c.

On the second day of the demonstration a larger building had to be used to accommodate the crowd. Mrs. Scott has taken a young woman from Tams to Philadelphia, to give her a thorough training in domestic economy. The student's expenses will be borne by the operators.

Be Careful

BY ALABAMA SUPERINTENDENT

The day after a recent mine explosion, the following editorial appeared in a Southern newspaper:

> For a number of years the matter of safety in mines has been given close study by leading experts among miners, operators and governments. Numerous appliances and methods have been devised and suggested in seeking a solution of the problem and some progress has been made. Yet the tragic event of yesterday in Alabama demonstrates afresh that there remains room for improvement.

In the same issue of the paper above quoted, a statement is made that coal is shot "on the solid" by black powder. Why not meet the issue squarely instead of looking for undiscovered causes for such explosions. More attention should be given by the miner, the operator and the government, to the enforcement of rules already in force. When the miner knows that he must obey certain fixed rules and the operator knows that he also must keep his mine safe, then only will the number of mine explosions be decreased.

If the miner is allowed to put two kinds of powder in the same shot; fire shots without tamping them to the end of the hole; make up black-powder cartridges with an oil lamp on his cap; keep explosives and exploders in the same box; walk past danger boards or shoot off the solid, is there any need to look further for the cause of explosions?

If the operator allows his miners to shoot "on the solid" with black powder, or if he permits gas to accumulate in old or new workings; if he countenances the driving of rooms 200 ft. up a 15-deg. pitch in a gaseous mine omitting crosscuts to keep down the cost, or the building of overcasts of 1-in. boards which will burn like paper, is there any reason for further talk on causes of explosions?

These are only a few of the many reasons why explosions occur.

Mr. Miner, are you violating any of the company's safety rules? Mr. Operator, are you keeping your mine safe and using safe mining methods? If you are, then ask the experts to look for new causes. If you are not, then put the blame on yourselves and get to work along safer lines.

Private Coal Cars

Investigation of the private car lines by the Interstate Commerce Commission calls attention to the coal cars owned by companies operating independently of the railroads. The attitude of the car-owning coal companies remains to be defined in the inquiry under way.

The coal cars of private companies constitute a small fraction of the total coal cars of the country. This is a different condition from the refrigerating situation, where the latest estimates of the commission indicate a percentage of ownership of about 50 per cent. for the railroads and the companies, where each own about 50,000 cars. Tank cars are 39,000, of which 9000 belong to the railroads.

The following figures are for the coal lines indicated:

Atlas Coke Co.	60
Baker-Whitely Coal Co.	150
Berwind-White Coal Mining Co.	*3,000
Boomer Coal & Coke Co.	500
Ellsworth Coal Line, C. P. R.	780
Jamison Coal & Coke Co.	1,500
Keystone Coal & Coke Co.	201
Lehigh Coal & Navigation Co.	100
Logan Coal Co.	150
Loyal Hanna Coal & Coke Co.	502
Morrisdale Coal Co.	150
Moshannon Coal Mining Co.	152
New England Coal & Coke Co.	400
New River & Pocahontas Consolidated Coal Co.	1,000
Penn Gas Coal Co.	1,418
Pennsylvania Coal Co. (Erie R.R.)	7
Pennsylvania Coal & Coke Corporation	†700
Pennsylvania Ontario Coal Line	412
Pittsburgh-Buffalo Co.	399
Pittsburgh Coal Co.	625
Quemahoning Coal Co.	400
W. J. Rainey	713
United Coal Co.	1,009
Vinton Colliery Co.	200
Washington Coal & Coke Co.	553
Westmoreland Coal Co.	2,101
Total	17,182

*Estimated. †Leased or controlled.

All repairs are at the charge of the owners. The cost of coal cars averages $700. Private car companies are paid 6 mills a mile for the use of their cars. The average time of a return trip of the cars to the mines from tidewater is fourteen days. The average haul is 300 miles to tide. This makes the return on the cars $1.80 a trip and $3.60 for the round trip. Average rates of freight in this district are for anthracite $1.40 a ton for prepared sizes, and $1.25 for steam sizes. For bituminous coal the rates are $1.55 a ton to South Amboy, Port Reading and Elizabethport, and $1.60 to Port Liberty. Boat charges from the lower ports are 18c. a ton and from Port Liberty 15c. a ton. Coal rates over the country show greater cost for anthracite than for bituminous.—*Wall Street Journal.*

DISCUSSION BY READERS

Working Coal under Sandstone Cover

Letter No. 8—Replying to the request for suggestions in reference to the best method of working coal under hard sandstone cover, COAL AGE, Nov. 15, p. 745, I would say: Assuming the mine is already developed, the rooms driven up and the work "standing on pillars," as describer by Mr. Anderson, the question presented is how to draw back the pillars in a manner that will avoid a possible squeeze and the consequent loss of pillar coal. To do this and to enable one to control the squeeze should one start, I would suggest the following general method:

As shown in the accompanying sketch (Fig. 1), the pillars should be worked back in sections of three, four, or even six rooms apiece, the gob line in each section being

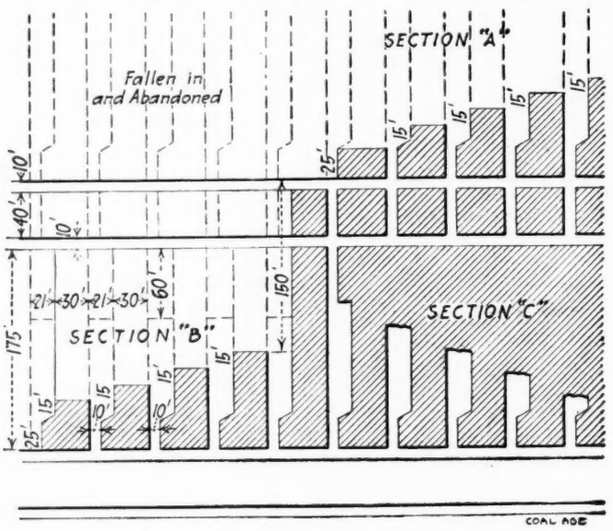


FIG. 1. PROPOSED PLAN OF DRAWING PILLARS IN SECTIONS

kept about 150 ft. in advance of the line in the next section following. My reason for this suggestion is that, should any fall or trouble occur in one section, it will not result in tying up the entire line of pillar work until the fault is remedied. Where the line is continuous any slight accident at one point would affect the entire gob line and greatly reduce the output of the mine and increase the expense of operation. On the other hand, by keeping a step of 150 ft. between two sections, as *A* and *B* (Fig. 1), the trouble is localized and work in other sections is uninterrupted. At *C*, I have shown a section of rooms advancing, which, of course, does not pertain to Mr. Anderson's present proposition.

An important point that will greatly assist the ventilation of the mine and should be adopted in any new development is that the cut-throughs in adjoining pillars should never be opposite one another, but should be "staggered." For example, the cut-throughs, as measured from the entry in room No. 1, center to center, are 70, 140, 210, etc., ft. In room No. 2, these distances are 35, 105, 175, etc., ft. In room No. 3, they are the same as given for room No. 1, and thus continue to alternate in each consecutive room.

Another important point has reference to the extraction of the chain pillar. This should not be split, as is often done, but chutes or rooms should be driven up through the pillar in consecutive order and located so as to line up with the regular rooms. It should be remembered that many a squeeze is started by the extraction of the chain pillar. It is important, also, to give proper attention to the drainage of the mine, so as to keep the rooms dry, especially if the bottom is soft. Another important feature is to consider the width of each separate step or slice taken off the ends of the pillars in the several sections. I would not advise a greater width than 15 ft., under ordinary conditions. I have seen the method, as outlined, worked successfully. It requires close attention, however, on the part of the mine foreman to see that the crosscuts in the butt headings are correctly measured and correspond to the rooms turned off the butts, so as to preserve a uniform straight line of rib.

For the mine described by West Virginia Engineer, I would suggest the adoption of the same plan as outlined above, except that where practicable I would vary the room centers so as to proportion the width of pillar to the depth of cover. Thus, under 400 ft. of cover, 60-ft. room centers could be used, which could be increased 10 ft. for each 100 ft. additional depth of cover.

PENNSYLVANIA SUPERINTENDENT.

Oliphant Furnace, Penn.

✠

Letter No. 9—I was much interested in the inquiries of W. F. Anderson and West Virginia Engineer, in respect to working coal under sandstone cover, and would like to give my own experience in similar work.

First, in regard to Mr. Anderson's mine, I consider 30-ft. pillars are too small for safe and efficient working under such conditions as he describes, especially as the sandstone roof is apt to crumble on exposure to the air. However, as this mine is largely standing on pillars, it is too late to discuss that aspect of the question. What must be considered now is, how to draw back the pillars, so as to obtain the largest recovery of coal, with safety.

In drawing pillars, under these conditions, I would take the coal out in two separate benches wherever the thickness of the seam was greater than 6 ft. Start at the upper end and drive a crosscut through the 30-ft. pillar close to the barrier, taking only the six feet of coal next to the floor. The width of the crosscut should not exceed 12 ft. In driving the crosscuts in the bottom coal, the place should be well timbered with posts set in regular rows parallel to the face. It is my experience that, in general, if plenty of timber is used in the first working, it can be almost wholly recovered in good condition. In some instances, I have seen entire pillars removed with the use of no new timber except that required for the working of the first slice or skip. This is a great saving in districts where the cost of timber is a large item in the

expense account. In the present case, I would set the first row of timbers as close to the face as possible, and space the other rows not to exceed 2½ or 3 ft. apart.

Having thus crosscut the pillar in the bottom coal, I would set two or three long props with good cap-pieces against the sandstone and proceed, then, to take out two or three rows of the props supporting the top coal and permit it to fall. A little experience will be required to ascertain the best amount of top coal to drop; and it is in this part of the operation that good timbering in the first working is of the greatest advantage. If the timber is well set and in sufficient quantity, the last row left standing will always act to break the roof coal, which will drop without trouble. On the other hand, if the place is not sufficiently timbered the roof pressure, instead of acting to break the coal, may work back and destroy the props which are too weak for its support. When the top coal has been loaded out, two or three more long props can be set to support the roof. All that is required here is sufficient timber to prevent the roof caving too close to the pillar, which would cause loss of time and make the work more difficult, besides producing dirty coal.

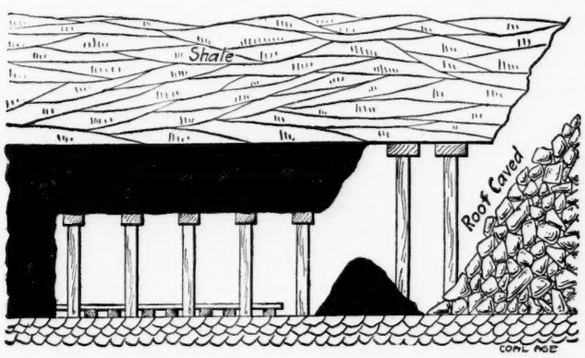


FIG. 2. SECTION SHOWING SUPPORT OF TOP COAL

When the work is well in progress, two miners can drop and load from 8 to 12 tons apiece a day. Allowing, then, 30 cu.ft. per ton of coal in place and estimating on 4 ft. of top coal, the weight of coal dropped in a single crosscut 12 ft. wide and 30 ft. long will be (12 × 4 × 30) ÷ 30 = 48 tons, which would give two miners work for from three to four days.

It is not advisable to crosscut the pillar a greater width or to take off a slice of coal wider than 10 or 12 ft. at a time, for the reason that the timbers on the goaf side are too far from the solid coal and are apt to be crushed before they are drawn. Moreover, too long a time would be required for driving a wider crosscut and trouble would result from the settlement of the roof too heavily on the timbers. The work requires considerable experience, and I have found it best to keep regular men employed on this work. When properly executed, the work is easier than ordinary hand mining. It may look dangerous to one unfamiliar with the system; but I have found the work can be more safely done and better results obtained when the coal is thus removed in two benches.

I have shown in the accompanying figure (Fig. 2) a section taken across the pillar separating two rooms and showing the top coal supported on rows of posts. Two long posts are shown supporting the sandstone roof beyond the top coal.

The case of the West Virginia Engineer differs from that of Mr. Anderson's in that the roof is a hard sandstone, which I consider is a battle half won. Since a soft bottom and small pillars generally spell disaster, I would lay out the mine, in this case, with pillars not less than 70 or 80 ft. square. The main roads and air courses should not be more than 12 ft. wide, while the ordinary stalls should not exceed 18 or 20 ft. in width. There is no economy in driving stalls wider than this, as it increases the cost for timber and subsequent upkeep and repair, while there is gained thereby but a few extra tons of coal, which would not be lost by making the pillars a suitable width.

In drawing pillars, in this case, I would take the full thickness of the seam, in one working. As each slice was taken off, I would draw as much of the timber as possible and allow the roof to fall before starting the next slice. By so doing, the pillar coal is relieved of excessive weight and the coal is more easily mined and in better condition.

JAMES DICKSON.

Nanaimo, B. C., Canada.

❖

Letter No. 10—Having had a number of years' experience in drawing pillars in a mine, under a solid sandstone roof of 40 ft. in thickness, with a bottom that gave some trouble by heaving, I was much interested in the inquiry of West Virginia Engineer, relating to such work. In our case, we found the best method to employ was to drive the headings to the boundary line. These headings were driven from 12 to 14 ft. wide, and the chambers were turned on 50-ft. centers. The chambers were 24 ft. wide, making the width of the room pillars 26 ft. The pillars were crosscut every 50 ft.

As shown in the accompanying sketch (Fig. 3), a solid block of coal was left between each set of five chambers.

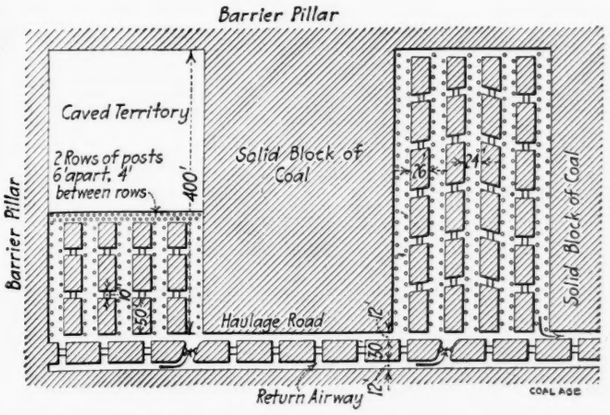


FIG. 3. DRAWING PILLARS IN PANEL SYSTEM

This coal was to be worked when coming back. When the work had progressed to the boundary line, or barrier pillar, the robbing of the pillars in the first five chambers at the inby end of the heading was commenced. The system gave good success and little coal was lost. At times, the roof would not cave until we had taken out the full length of three pillars. It would then break off at the pillars, leaving it in a condition that, by setting a few props, we could get out that pillar and then get back at the next one. In this system, we did not have to use many props in driving up the chambers; but when

starting to draw back, we would set timbers at the end of every pillar, across the entire place, as I have shown in the sketch, in the inby section where the pillars are being drawn (Fig. 3).

Owing to the strong roof, the chambers were turned their full width and the track was carried up as close to one rib or side of the chamber as possible, so as to be convenient for loading the coal when robbing that pillar. These chambers were driven from 400 to 600 ft. long. At times, we would bring back 10 chambers or two sets of rooms at a time; but the best results were obtained when each set was drawn back separately. The most competent and reliable men were employed on this work, four men working on each pillar—two miners and two laborers. The four men would put out 12 cars a shift. The seam made little waste and this was thrown on the opposite side of the track from the pillar to be robbed. Heavy props were used, varying from 12 to 16 in. in diameter. Overlying this seam was a cover, varying from 100 to 350 ft. thick.

In the seven years I was robbing pillars, in this mine, we lost not over 3 per cent. of the coal; and it is my opinion that if this system is followed of driving the headings to the boundary before starting to rob, 85 per cent. of the pillar coal can be reclaimed. After the room pillars have been robbed, each solid block of coal is worked out and the pillars drawn in turn. The entry pillars are drawn back as each section is finished.

THOMAS R. PIERCE.

Scranton, Penn.

Loss in Pillar Work

In my recent article on the method of drawing pillars in the Fairmont region, published Nov. 22 in Vol. 4, p. 762, I note that the introductory synopsis stated that only about 2 per cent. of the coal was lost in pillaring. Theoretically this may be true, but I do not wish to have this statement misconstrued by your readers, because we know that it is practically impossible to obtain this percentage in actual pillar work.

I believe it bad policy for the mine operator to boast of his recovery of pillars or to exaggerate its percentage of the coal exploited, because there is always the possibility of such a statement being used against mine operators by lessors of coal properties, and it is my opinion that if 90 per cent. is secured as an ultimate recovery, it will probably be the limit of what we may expect.

A. W. HESSE,
Assistant Chief Engineer,
West Virginia Division, Consolidation Coal Co.
Fairmont, W. Va.

Study Course in Coal Mining

BY J. T. BEARD

The Coal Age Pocket Book

Similar Airways—Two airways are similar to each other when their cross-sections are similar; the term "similar" has no reference to the length of the airway.

The cross-sections of airways are similar when their corresponding dimensions are proportional, each to each, and their perimeters parallel throughout or can be so placed.

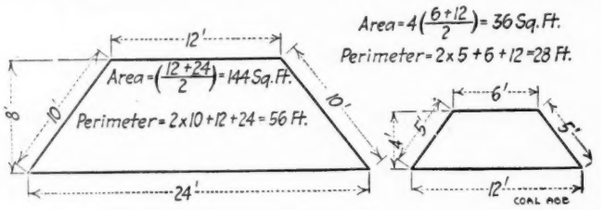
Illustration—All circular or square airways are similar, because they have but one dimension—the diameter of the circle or the side of the square, and these dimensions are, therefore, always proportional.

For example, one circular airway may have a diameter twice or three times as great as that of another circular airway; or the side of a square airway may be two or three times that of another square airway; and their perimeters can always be placed so that they will be parallel, each to each.

On the other hand, the rectangle, trapezoid and ellipse each have two dimensions; and while one of these dimensions may be two, three, etc., times as great as the corresponding dimension of another airway of the same form, it does not follow that the other dimensions of the two airways have the same proportion; and unless they do the airways are not similar. Thus, a 6x8-ft. airway and a 9x12-ft. airway are similar, because their corresponding sides have the same ratio, or are proportional and may be written

$$\frac{6}{9} = \frac{8}{12}; \quad \text{or } 6:9::8:12$$

A 6x8-ft. airway and a 3x16-ft. airway, however, are not similar airways, though they have equal sectional areas ($6 \times 8 = 48$ sq.ft., and $3 \times 16 = 48$ sq.ft.); because the second airway is twice as wide, but only half as high as the first.



AN EXAMPLE OF SIMILAR TRAPEZOIDS

It is important to observe that, in all similar airways, the ratio of the sectional areas of the airways is equal to the square of the ratio of the corresponding dimensions. For example, in the above figure showing similar trapezoidal sections ,the top, bottom and sides of the larger airway are each twice those of the smaller, and the area of the larger section is $2^2 = 4$ times that of the smaller.

The Coal Age Pocket Book

Principle of Similar Airways—Since corresponding dimensions of similar airways have a fixed ratio, which is the same for each dimension (diameter, side, height or width) it is possible to compare similar airways with respect to any of these dimensions.

Application—Assume, for example, the same pressure (p) is applied to each of two similar circular airways, and it is required to find how the quantity of air will vary in the two airways. First write the formula for the quantity (q), in terms of the pressure (p) and the dimensions, area (a), perimeter (o) and length (l) of the airway, and the coefficient of friction (k):

$$q^2 = \frac{p\,a^3}{k\,l\,o}$$

Now, if the two airways have the same length p, l and k are all constant and

$$q^2 \text{ varies as } \frac{a^3}{o}$$

But, the area of a circle varies as the square of its diameter (d^2) and the perimeter varies as the diameter (d); hence,

$$\frac{a^3}{o} \text{ varies as } \frac{d^6}{d} \text{ or simply as } d^5$$

In the same manner, it can be shown, in respect to all similar airways of any form, that the square of the quantity varies as the fifth power of any corresponding dimension (d), whether diameter, side, height, or width;

$$q^2 \text{ varies as } d^5$$

which gives the following:

Rule—In comparing similar airways of equal length, for the same unit pressure, the square of the quantity ratio is equal to the fifth power of the dimension ratio; and, for the same power on the air, the cube of the quantity ratio is equal to the fifth power of the dimension ratio.

Example—If 100,000 cu.ft. of air is passing per minute, in a 6x9-ft. airway under a given pressure, what quantity of air will the same pressure circulate in an airway 8x12-ft. of the same length? What quantity will the same power circulate?

Solution—These airways are similar because their corresponding dimensions are proportional 6:8::9:12. Therefore, calling the required quantity x,

$$\left(\frac{x}{100{,}000}\right)^2 = \left(\frac{8}{6}\right)^5 = \left(\frac{4}{3}\right)^5 = \frac{1024}{243} = 4.214$$

$$\frac{x}{100{,}000} = \sqrt{4.214} = 2.0528$$

$$x = 100{,}000 \times 2.0528 = 205{,}280 \text{ cu.ft. per min.}$$

Assuming a constant power on the air:

$$\frac{x}{100{,}000} = \sqrt[3]{4.214} = 1.6152$$

$$x = 100{,}000 \times 1.6152 = 161{,}520 \text{ cu.ft. per min.}$$

An Interesting Crossover Problem

SOLUTION BY A. F. ALLARD*

[In reply to the request of a correspondent who submitted the interesting problem in trackwork, COAL AGE, Nov. 15, p. 745, a number of answers have been received. From this number, in accordance with our promise, we have selected and give below the simplest and most direct method of solution of the problem submitted.—ED.]

THE PROBLEM

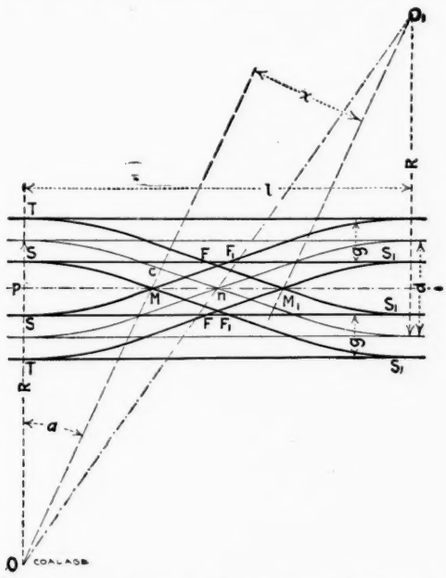
Given:

Entire length of crossover	l;
Distance between track centers	d;
Gage of track	g;
Radius of all curves	R;

all dimensions being expressed in feet.

It is required to find the following:

1. Length (x) of straight rail at center of crossover;
2. Angle (a) that subtends the curved track or rails.
3. Radius and length of outer curved rail.
4. Radius and length of inner curved rail.
5. Frog angles at F or F_1 and M or M_1.
6. Frog distance (SF or S_1F_1), measured on straight rail.
7. Length (TF) of lead (outer) rail.
8. Length (SM) of follower (inner) rail.



PLAN OF A DOUBLE CROSSOVER SWITCH OR "DIAMOND"

SOLUTION—Referring to the accompanying figure:

(1) To find the length of straight track x:

$$oN^2 = On^2 - Oc^2$$

but

$$On^2 = Op^2 + pn^2$$

therefore,

$$cn^2 = Op^2 + pn^2 - Oc^2$$

But, $cn = x/2$; $Op = R - d/2$; $pn = l/2$; $Oc = R$; and substituting these values given in the last equation gives

$$\left(\frac{x}{2}\right)^2 = \left(R - \frac{d}{2}\right)^2 + \left(\frac{l}{2}\right)^2 - R^2$$

$$x = \sqrt{l^2 + d^2 - 4Rd}$$

which is the required length of straight rail at the center of the crossover.

(2) To find the angle (a) subtending the curve:

$$SOM = SOn - cOn;$$

but,

$$tan\ SOn = \frac{l}{2R - d}$$

and

$$tan\ cOn = \frac{x}{2R}$$

From these three formulas, the angle SOM or a is readily calculated.

(3) The radius of the outer curved rail of each switch is $R + g/2$. This curve is subtended by the angle a; and its length calculated by the formula

$$\frac{a}{180}\pi\left(R + \frac{g}{2}\right)$$

(4) The radius of the inner curved rail of each switch is $R - g/2$; and the length of this curve is calculated by the formula

$$\frac{a}{180}\pi\left(R - \frac{g}{2}\right)$$

(5) The frog angle at F and F_1 is equal to the angle SOM or a; because SO and OM are, respectively, perpendicular to the straight rails of the crossover and those of the main track.

The frog angle at M and M_1 is exactly twice the frog angle F or F_1.

[This is true when $(2R - g)\ (1 - cos\ a)$ is equal to or less than $d - g$; but if greater than $d - g$, this frog will fall on the curve, in which case the frog angle at M will be twice the angle, whose cosine is $\frac{2R - d}{2R - g}$.—ED.]

(6) The frog distance SF or S_1F_1 is calculated by the formula

$$SF = \left(R + \frac{g}{2}\right) tan\ \tfrac{1}{2}a + \frac{g}{tan\ a}$$

(7) The length of the lead rail (TF) is calculated by the formula

$$TF = \left(R + \frac{g}{2}\right)\left(\frac{a}{180}\pi - tan\ \frac{a}{2}\right) + \frac{g}{sin\ a}$$

(8) The length of the follower rail (SM) is calculated by the formula

$$SM = \left(R - \frac{g}{2}\right)\left(\frac{a}{180}\pi - tan\ \frac{a}{2}\right) + \frac{d - g}{2\ sin\ a}$$

[A number of good solutions to this problem were received from correspondents. The solution of Donald M. Liddell, New York, ranks second.—ED.]

*Chief engineer, Bunsen Coal Co., Danville, Ill.

EXAMINATION QUESTIONS

Miscellaneous Questions

(Answered by Request)

Ques.—What are the different methods used in mining coal on moderate pitches and steep pitches, respectively?

Ans.—With the use of wooden rails in the rooms, cars may be taken to the face and loaded cars safely handled by hand on inclinations up to about 5 deg.; or, say 3 in. per yd., provided the cars are properly spragged and do not weigh to exceed 1 ton when loaded. By driving the rooms across the pitch, or at an angle not less than 30 deg. with the gangway, under the same conditions, it is possible to handle the cars with safety, from the face to the gangway, on any inclination up to 10 deg.

When rooms are driven on the full pitch of the seam, cars are often raised and lowered between the working face and the gangway, on inclinations varying from 5 to 10 deg. Self-acting inclines are used on inclinations varying from 5 to 15 deg.; and, by the use of a "barney," the same gravity system is used on inclinations varying from 10 to 30 deg. In the use of these systems, the weight of the loaded car should not exceed 3000 lb.

In what is called the "buggy system," which is only adapted to thick seams, the coal is transported from the face to the gangway in stages, by low cars or trucks, the coal being dumped into another car at the end of each stage until the gangway is reached, where it is loaded into the regular mine car. This system is used on pitches varying from 10 to 18 deg.

"Chute mining" is used quite generally on inclinations from 15 deg. upward. The chutes must often be lined with sheet iron, until the inclination of the chute exceeds 30 deg., when the coal slides on the natural floor of the seam. In very steep pitches, the "battery system" is used where the chute is kept full of broken coal, which is drawn only as the face of the breast progresses upward, the miner standing on the broken coal at the face while performing his work.

Ques.—Which would require the use of the largest pillars and why, hard bottom and soft top, or soft botton and hard top?

Ans.—The width of room pillars depends chiefly on the depth of cover or roof pressure, the hardness of the coal and thickness of the seam, the width of pillar then bearing a certain relation to the width of the opening.

A hard bottom and soft top require narrow openings in order to safely support the weak roof; and, as a result, the required width of pillar is reduced in proportion, for the same conditions of seam and overburden. With a soft bottom and hard top, the conditions are quite different. The rooms or openings can be driven wider, which increases the width of the pillar proportionately; but the width of the pillar is still further increased by the difficulty of breaking the top, so that the roof will fall and relieve the pressure on the pillars.

Therefore, in answer to the question, it may be said that, in general, the widest pillars are required when the bottom is soft and the top hard. The wide pillar, in this case, distributes the roof pressure over a greater area and avoids the tendency of the bottom to heave. The size of the pillar is also increased by the inclination of the seam.

Ques.—What precautions would you use in driving toward old workings of unknown location?

Ans.—When driving toward old abandoned workings, a single prospect heading, not exceeding 8 ft. in width, should be driven in advance of the other workings. A drill hole should be kept 5 or 6 yd. in advance of the face of the heading, and flank holes should be drilled at an angle of about 45 deg. with the entry, every 8 or 10 yd. of advance. Wooden plugs should be kept in readiness for use in case a drill hole taps water. A sharp lookout should be kept for any increase of water or gas at the face of the heading. Only safety lamps should be used in the work.

Ques.—How would you drive a slope on a uniform grade, without an engineer's level?

Ans.—A long straight-edge should be used to lay on the floor of the entry, or on the rails, and on the top of this should be arranged a template cut to the required angle of the slope; so that when the straight-edge lies on the floor of the slope the top of the template will be level. A common handlevel is then used on the top of the template to indicate when the slope has the proper grade or inclination.

Ques.—At what point in the mine should the "intake" air current be considered the "return"?

Ans.—In general, the air current is called the return current, the moment it enters the return airway. In some cases, it is difficult to determine with exactness this point of difference. What is the *return* current of one section of the mine may become the *intake* current of another section.

The most approved plan of circulation in a well developed mine makes the return air of each section enter the main-return airway, at once. This system, however, requires the erection of an overcast or air bridge at the mouth of each section. But, until the development of a pair of entries is sufficient to warrant the expense of the erection of an air bridge, the circulation is made continuous through that pair of entries and the main headings inby from that point.

Speaking, therefore, in reference to a single pair of entries, it is correct to speak of the "intake" and "return" currents passing through them. But, with respect to the entire mine, the current is all an "intake current" until the farthest point inby is reached, which is generally the last crosscut on the main heading. From this point outby, the current is properly termed the "return current," with respect to the entire circulation, although this same current may be made to traverse another pair of headings, in which the circulation may be referred to as "intake" and "return," for that particular section or pair of headings. The main intake and return airways are the main airways outby from the last air bridge nearest the face of the main heading.

COAL AND COKE NEWS

Washington, D. C.

Coal-mining interests are organizing for the purpose of opposing the advance in rates on railroads, which is now being urged upon the Interstate Commerce Commission. Their hostility to the scheme has been manifest for some time past but is now coming to a head in the bituminous trade.

The Pittsburgh Coal Co. is prominent in leading the opposition to the advance in rates and has already engaged expert counsel. The view apparently taken by the coal people is that they constitute an exception to the general rate situation in that rates are already too high on their product, so that they should not be advanced in any event.

In a general way they are preparing to argue that even if it should be found that the railroads are in some cases suffering for lack of higher rates, it would be of no particular use to grant them because the organizations of railroad employees which have shown their power so strongly within recent months would at once take the increased income away from them. The result would be that the roads would then be left, it is claimed, in precisely as difficult a position as they are today while the shippers and the public would be obliged to struggle along under the burden of higher rates resulting from the adoption of the advance as requested.

On the other hand it is openly suggested that if the rate advance is actually granted, coal producers who are now doing business upon an exceedingly narrow margin of profit will immediately resort to the courts for relief. It is pointed out that in so doing they would be able to urge that the advanced rates were practically confiscatory, because as has been shown in the past operations are on so close a margin of profit.

This point was elaborately brought out at hearings before the commission in 1912, when the bituminous companies in the Ohio region protested strongly against the proposed advances which the railroads were endeavoring to force upon them at that time. It is doubtful whether an effort to get an injunction from the courts, should higher rates be allowed, would prove successful, inasmuch as the present hearings before the commission are merely in the nature of an investigation and do not deal with any specific schedules of advance rates.

The commission, when the rate question came up in an acute form, had the schedules withdrawn and then announced that it intended to institute a proceeding on its own account, into the general justice of the proposed rate advance. The present investigation was the result of the promise thus given.

If it should turn out in favor of the roads, what would happen would be simply that the commission would practically express a willingness to see advance rate schedules filed. Then presumably the advance would be filed and shippers would have to go through the form of filing a complaint which the commission would presumably set aside. Appeal could be taken to the courts, and an injunction asked for, but it is doubtful whether such an injunction would be made permanent in any case, in view of the previously favorable finding of the Interstate Commerce Commission.

Prolonged litigation would then have to be carried on by the coal companies and others similarly situated if they wished to prevent the advances from being put into ultimate effect, and meanwhile the higher rates would continue to be charged as permitted by the commission. According to counsel for the coal companies, their argument will be largely directed toward inducing the commission to make, in its final opinion, a distinct exception in favor of the coal producers, should that opinion actually favor higher rates, on commodities in general.

PENNSYLVANIA

Anthracite

Shamokin—The recent discovery of two veins of coal by workmen digging a foundation for a new public-school building, suggested a novel idea to Supt. Howerth, of the public schools. He proposes to leave a large portion of the measures exposed and cement the cellar. Expert mining men will be asked to timber the seam and make miniature breasts, headings and gangways to show how coal is taken from the earth. The exhibit would be used as a practical demonstration of mining methods for students and a showplace for the public, which, owing to a recent order of coal companies, is not permitted to visit underground workings. One of the veins is 10 ft. and the other 4 ft. thick.

Tamaqua—Ernest Fink and C. A. Milloux, of New York, who, for the past year or more, have been prospecting for coal in the Owl Creek Valley, have abandoned the project and shipped their machinery away. The company recently became incorporated under the name of the Eastern Pennsylvania Coal Co., and bought the Phillips operation, near Middleport, which is now working.

Plymouth—Two strikes within a week is the record established at the Lance Colliery of the Lehigh & Wilkes-Barre Coal Co., at Plymouth. The men went out at first on account of a difference existing between the check docking boss, John Bodgen, and the company. Later they returned to work with the understanding that the grievance would be settled. When the company failed to reinstate the check docking boss, the men were again ordered to remain away from work.

Wilkes-Barre—An interesting departure from the usual custom in making up the program for mining institute meetings was that of the last meeting of the Wilkes-Barre District Mining Institute, in which Jacob Urban, a Polish miner employed by the Lehigh Valley Coal Co., gave an illustrated lecture in Polish, on the accidents common to coal mining and the ways in which they could be prevented, using the photographs made by the Lackawanna Coal Co. for the instruction of its employees. Officials of the Wilkes-Barre Institute hope in this way to reach others than the mine foremen and assistants, for whom most of the previous programs have been arranged.

Bituminous

Canonsburg—Work in a number of the coal mines in the Chartiers Valley is becoming quite slack. At Westland, the mines have been shut down since prior to Thanksgiving, while others in the vicinity are operating only a part of the time. Some miners are leaving for their former homes across the Atlantic.

Evans City—The Evans City Coal Co. is lifting the options it holds on about 6000 acres of coal lands along the Harmony trolley line, mostly in Butler County. The Evans people will shortly open their first mine. Deeds for the purchase of the tract are being prepared and a deal is under way for the taking of additional coal land in Forward Township, Allegheny County, the intention being to option and later buy several thousand acres.

Pittsburgh—On a petition presented by the Pittsburgh Provision & Packing Co., asking for the appointment of a receiver for the White Rock Supply Co., Judge J. B. McFarlane appointed F. R. Babcock, J. W. Ailes and John H. Jones. These are the same receivers recently appointed for the Pittsburgh-Buffalo Co. The White Rock Supply Co. is the general supply store connected with the coal company interests.

WEST VIRGINIA

Wheeling—A rumor has been circulated to the effect that a deal for large coal holdings has been closed, whereby the Lorain Coal & Dock Co. has purchased the West Wheeling mine holdings. The latter lie across the river in Ohio. Just what the consideration was is not known, but it is said to be large.

Huntington—It is stated here by those interested in the recent negotiations between an English syndicate and a number of coal operators for the purchase of coal land in the New River field, that this deal has fallen through, at least for the time being. It was thought when the negotiations first started with the English syndicate that one of the largest coal deals that had ever been made in West Virginia would be consummated and practically all contracts had been drawn up for that purpose. The foreign financiers, however, insisted on six months, while the local operators stood together on a 10- to 30-day limit to options, with the result that the deal was not consummated nor does it seem probable that it will be unless better terms can be secured in the spring.

TENNESSEE

La Follette—Employees at the Rex No. 1 coal mine of the

La Follette Coal, Iron & Ry. Co. have been on strike since Dec. 2, and at Rex No. 2 mine since Dec. 4, on account of the discharge of a gasoline locomotive repair man, for not following instructions. A few of the men are still at work at each place, the number increasing each day. It is expected that all the men will be back to work in a very few days.

KENTUCKY

Louisville—The complaint of the Drury Coal Co. against the Illinois Central R.R. Co., filed with the Interstate Commerce Commission, will be heard by a special examiner in Louisville on Feb. 2.

Henderson—After six months' work, the Spottsville mine of the Pittsburgh Coal Co., has been pumped out, and will shortly be in good shape for work. The mine is said to reach one of the finest beds of coal in the western part of Kentucky, and its product is in good demand.

Sturgis—The West Kentucky Coal Co. broke all records in the western Kentucky field when it got out 4980 tons in one day last week. The company is now employing 1100 men, all of whom are working regularly. This is the largest force ever employed by any company in that part of the state.

OHIO

Martins Ferry—Deeds have been filed at St. Clairsville transferring several parcels of coal land in Washington and Smith townships to the Glens Run Coal Co. for a total consideration of $15,433.15. The sale of this coal is believed to be connected with that sold by the receivers of the J. W. Gorrell Coal Co. to the Glens Run Co. some time ago at a much larger price.

INDIANA

Boonville—Efforts of organizers to unionize the coal-stripping field have been answered by the Sunlight Coal Co. by the discharge of thirty employees who had signed to join the union.

Evansville—Henry F. Allen, of Pittsburgh, representing capitalists of that city who have made arrangements to merge fifteen to twenty of the largest coal mines in western Kentucky, have leased the building now occupied by the First National Bank, to be used as offices for the new company. The capitalists believe western Kentucky will become one of the largest coal fields in the Middle West, with the completion of the Panama Canal and the building of locks and dams along the lower Ohio River.

ILLINOIS

Herrin—With about a 70% car supply, mine No. 8 of the Big Muddy Coal & Iron Co. hoisted approximately 70,000 tons of coal last month, which is a record breaker, all things considered.

Edwardsville—The De Camp Coal Mining Co., of De Camp, Ill., has gone into the hands of a receiver, C. W. Huskinson, of Alton, Ill., an old mining man, having been appointed to take charge of the property. The application was filed by the State and Trust Bank of Highland, Ill., as trustee for the bondholders. The De Camp company is one of the oldest in this field, and at one time was one of the largest wholesale and retail companies in St. Louis.

Hillsboro—The 300 miners employed in the Kortcamp mine here, who have been on strike for five weeks, reported for work a few days ago. After settling their troubles they found to their surprise that they were not regular union miners and could not go to work, inasmuch as the state officers of the Mine Workers had revoked their charter. The cause of the walk-out was that a man was given a job of unloading before his turn. The miners demanded his discharge and would not abide by the ruling of the pit committee. The state officials backed up the pit committee and a new charter will have to be taken out. In the meantime the mine continues idle.

East St. Louis—The railroads entering St. Louis are commencing to store coal in anticipation of labor troubles next spring. The Illinois Traction System is figuring on filling a large concrete reservoir at Riverton, Ill., with 30,000 tons, and storage yards are contemplated at other points. The Illnois Central is laying tracks at Marine, where it will, it is understood, store 50,000 tons. The Illinois Southern is storing at points along its line about 10,000 tons. All other roads are buying in small quantities, so as not to disturb the low market price.

Springfield—The coal-carrying roads of Illinois are suffering on account of the mild weather of the present winter. Coal ordinarly constitutes a considerable portion of their traffic, and with the decreased demand for fuel, the earnings suffer in proportion. On the Wabash R.R. the Decatur Division loaded 5469 cars in November, 1912, as against 4746 this year. All other roads are loading in similar quantities.

COLORADO

Lafayette—An explosion occurred Dec. 16 at the Vulcan mine of the Rocky Mountain Fuel Co., at Lafayette, Boulder County, Colo., about 18 miles in a direct line approximately north-northwest of Denver. It is said that 38 men were killed, all of whom were married, and all but eight Americans. The mine was only a year old and according to reports, it was well equipped. It is located on the Colorado & Southern R.R.

The coal is sub-bituminous. An analysis of a nearby coal showed moisture 19.15 per cent, volatile matter 30.82, fixed carbon 44 27, sulphur 0.25 and ash 5.51. On air drying the loss is 13.4 per cent.

It appears that the mine caught fire after the explosion, making recovery difficult.

FOREIGN NEWS

Rydnik, Prussia—Sixteen miners were recently killed here by smoke from a fire which started suddenly in a mine. The fire was extinguished, but not until this number of men had been overcome.

Montreal, Canada—It is understood that arrangements for financing the Canadian Coal & Coke Co. have made satisfactory progress. Interim certificates of two-year 6 per cent. notes are now being sent out and will be replaced shortly by the definite certificates. The arrangements are said to concern the sale of an issue of $2,000,000 to $3,000,000 first-mortgage bonds, which will ultimately retire the short-time notes and bank loans and provide additional funds for the use of the company.

PERSONALS

M. T. Davis, president of the Cabin Creek Consolidated Coal Co., has disposed of his interest in that firm and has retired from the presidency. William Puckett, one of the largest stockholders, has been elected president. The company has an authorized capital of $1,500,000, of which $1,200,000 has been paid.

G. P. Troutman, of West Pittston, assistant division superintendent and division engineer of the Lackawanna Division of the Lehigh Valley Coal Co., has tendered his resignation, to take effect on Dec. 24, to accept the position of Assistant General Manager for Markle & Co., at Jeddo, the largest individual operators in the anthracite region.

J. C. Davies, state mine inspector of Ohio, has appointed the following district deputies. Dennis H. Sullivan, Coshocton, secretary of the State Board of Arbitration, deputy in the sixth district; Morris Albaugh, Murray City, deputy in the second district; Andrew Ginan, of Jacksonville, deputy in the third district, and Evan Lewis, of Harmon, deputy in the seventh district.

E. S. Rolapp, G. W. Cushing, J. A. Reeves, Henry Conlan, Jr., J. F. Emmert, D. D. MacLean, F. J. O'Brien and William Gorton, coal-mine operators of Utah and Wyoming, were in Portland recently and discussed with Traffic Manager R. B. Miller, of the O.-W. R. & N. company, the possibility of getting reduced rates on coal freights from their mines into the Pacific Northwest. The mining men contend that the rates now charged prevent them from entering this territory in competition with mines on other roads having more favorable rates.

RECENT COAL AND COKE PATENTS

Grate Bar. E. L. Thomas, Valdosta, Ga. 1,075,874. Oct. 14, 1913. Filed Apr. 25, 1911. Serial No. 623,229.

Superheater. J. Primrose, New York, N. Y. 1,076,315. Oct. 21, 1913. Filed July 10, 1912. Serial No. 708,602.

Miner's Pick. J. P. Craven, Elizabeth, N. J. 1,076,103. Oct. 21, 1913. Filed Apr. 26, 1913. Serial No. 763,901.

Mine Hoist Recorder. O. W. Ingels, Carlyle, Ill. 1,079,493, Nov. 25, 1913. Filed Jan. 16, 1913. Serial No. 742,447.

Gas Producer. Louis Friedman, New York, N. Y. 1,076,823. Oct. 28, 1913. Filed Feb. 13, 1912. Serial No. 677,381.

Coal Washer—J. B. Keenan, Birmingham, Ala., 1,073,992, Sept. 23, 1913. Filed Nov. 23, 1912, Serial No. 733,151.

Mining Machine. H. A. Kuhn, Pittsburgh, Penn. 1,079,-353, Nov. 25, 1913. Filed Oct. 12, 1907. Serial No. 397,126.

Rotary Coal Screen. F. S. Concerse, Binghamton, N. Y. 1,-079,543, Nov. 25, 1913. Filed May 4, 1911. Serial No. 625,634.

Steam Superheater—A. Bolton, Manchester, Eng., 1,073,-844, Sept. 23, 1913. Filed March 19, 1913. Serial No. 755,-440.

Apparatus for Pulverizing Coal—C. A. Bettington, London, Eng., 107,040, Sept. 23, 1913. Filed Nov. 15, 1909. Serial No. 528,150.

Fuel Economizing Apparatus—E. F. Clarke, Birmingham, Eng., 1,073,795, Sept. 23, 1913. Filed Feb. 24, 1913, Serial No. 750,306.

Gas Producer—C. H. T. Alston and P. T. Houston, London, Eng., 1,074,032, Sept. 23, 1913. Filed June 28, 1913, Serial No. 776,415.

Furnace for Steam Generators. J. Ramacher, Cologne, Germany. 1,077,203. Oct. 28, 1913. Filed Apr. 29, 1912. Serial No. 693,852.

Improvements in Apparatus for Washing Coal and the Like. Clifton & Kersley Coal Co., Ltd., Clifton, Manchester, England. 12,913 of 1913.

Improvements in and Connected with Coal and Other Mine Conveying Machinery. E. Douglas, Bispham Hall, near Wigan, England. 24,256 of 1912.

Gas Producer. J. K. Lyons, Pittsburgh, Penn., and J. B. Hardee, Crafton, Penn. 1,075,716. Oct. 14, 1913. Filed Jan. 2, 1909. Serial No. 470,486.

Improvements in or Relating to Apparatus for Making Coke and Gas. H. Neilson, 117 Julienstrasse, Essen-Ruttenscheid, Germany, 14,376 of 1912.

Method of Removing Impurities form Coal Gas—G. H. Hultman Stockholm, Sweden, 1,073,605, Sept. 23, 1913. Filed June 3, 1913, Serial No. 771,411.

Rectangular Gas Producer—R. B. Mildon assignor to Colonial Trust Co., Pittsburgh, Penn., 1,073,919, Sept. 23, 1013. Filed Apr. 9, 1910, Serial No. 554,541.

Improved Device for Preventing Accidents in Coal and Other Mines due to Overwinding. W. Wilson, Bathville Cottage, Armadale, Scotland. 1655 of 1913.

Improvements in Explosives for use in Coal Mining and the Like. G. Carew, and British Wesefalite, Ltd., all of Powder Factory, Denaly, near Rotherham, England. 8530 of 1913.

Steamship Furnace. C. A. Kuenzel, assignor to Kuenzel Gas Producer & Smelter Construction Co., a corporation of Washington. 1,076,893. Oct. 28, 1913. Filed Aug. 17, 1912. Serial No. 715,576.

Improvements in or Connected with Stamping Machinery for Compressing Various Materials, and More Especially Coal for Coke Making and the Like. J. J. H. Mackinlay, of Wroctwardine House, Salop, and Wm. Krueger, 61 Southfield Rd., Middleboro, England. 21,423 of 1912.

CONSTRUCTION NEWS

Wilkes-Barre, Penn.—The foundation walls for the breaker to be built by the Lehigh Valley Co., at the Packer No. 5 operation at Girardville, has been completed.

Kittanning, Penn.—The Wallworth Coal Co. recently took out papers to establish a town, to be known as Wallworth, on the opposite side of the Allegheny River from Kittanning. The company will open mines there.

Sandusky, Ohio—The first crib has been sunk for the construction of the $1,000,000 coal docks of the Lower Lakes Dock Co. in West Sandusky. This will support the loading machine to be installed when the dock is completed.

Ellwood City, Penn.—The National Coal Co., of this place, backed mostly by local capital, will begin the construction of one of the largest and most substantial coal elevators in this section along the tracks of the Baltimore & Ohio Railway.

Huntington, W. Va.—A railroad line, which will extend from the Kentucky coal fields to Baltimore, and which will shorten the haul of 200 miles, is being projected by a party of capitalists, among whom is John T. McGraw, of Grafton, W. Va.

Martins Ferry, Ohio—Work has commenced on the improvement of the Webb mine of the Pennsylvania R.R. Co. and will continue for several months. The company is moving the tracks and changing the channel of Wegee Creek in order to increase the output of the mine.

Fleming, Ky.—The Mineral Fuel Co. has started the building of another industrial city on Yount's Fork, two and a half miles from Fleming, where a large coal development is soon to be started. The name of the new city has not yet been agreed upon, but a number of mines will be opened there.

Jenkins, Ky.—Rush work characterizes the construction of the power line from the mammoth power plant of the Consolidation Coal Co. here to the big operations of the Elkhorn Coal Corporation on Beaver Creek, also the Elkhorn Coal & Gas Co. now doing large development work in the Beaver Creek coal fields.

Craftsville, Ky.—There are plans developing here for the early construction of a branch of the Lexington & Eastern R.R. from Craftsville to the headwaters of Millstone Creek, four miles, to reach extensive timber and coal lands of the Mineral Development Co., who are billed to begin immediate development work.

Wayland, Ky.—Eighteen miles of the 24 of the Beaver Creek Branch of the Chesapeake & Ohio R.R., from the mouth of Beaver Creek to reach the coal operations of the Elkhorn Coal Corporation and the Milwaukee Coal & Gas Co. have been completed and double time is being made on the laying of the steel on the remaining six miles.

Fleming, Ky.—S. T. Mundy, of the Mundy Construction Co., Hazard, Ky., has been awarded the contract for the construction of the two and a half-mile branch of the Yount's Fork Creek extension of the Lexington & Eastern R.R., from Neon to the new coal operation now being started by the Mineral Fuel Co. The construction of the new branch is to be started immediately.

Blackey, Ky.—Contract for the construction of the Rockhouse branch of the Lexington & Eastern R.R. from Blackey into the headwaters of Rockhouse Creek 18 miles to reach the rich coal lands of the Rockhouse Coal Co., the Slemp Coal Co. and the Litts Coal Co. has been awarded Adams & Sullivan, of Louisville. It is expected that the construction will be fully begun by Jan. 1.

Whitesburg, Ky.—Work of opening the Mineral Fuel Co.'s several mines at Haymond, on Pottersfork, is being rushed with all possible haste, while a large number of miners' homes are going up rapidly. Indications now are that the new city is going to meet a most phenominal growth. It will be reached by a three-mile branch of the Lexington & Eastern work upon which is now being rushed by Farbrick & Baxter, contractors.

Wayland, Ky.—The Ballard & Herring Co. has been awarded a contract to build two miles of railroad line up Stone Coal Creek from here to reach rich and extensive coal holdings of the Elkhorn Coal & Gas Co., who will begin at once the development of their holdings. The building of another industrial mining city is to start at once. This is two miles from Wayland. The branch railroad is from the Beaver Creek branch of the Chesapeake & Ohio R.R.

Birmingham, Ala.—The Republic Iron & Steel Co. announces the following improvements which will be started at once: The complete dismantling of No. 1 furnace at Thomas, Ala., and its reconstruction, at a cost of approximately $75,000, the almost total reconstruction of the properties at Palos including the construction of a modern tipple, washer, etc. In all probability, also, a battery of byproduct coke ovens will be built at the Thomas plant, but while this has not definitely been decided, the other improvements mentioned have been authorized.

NEW INCORPORATIONS

Covington, Ky.—The Carlisle Coal & Land Co. has been incorporated by Richard P. Ernst, George Stugard and John E. Shepherd, with a capital stock of $5000.

Clinton, Ind.—The Essanbee Mines Co., of this city, has increased the number of its directors from four to five, and has changed its place of business to Terre Haute.

Columbus, Ohio—The Hamilton-Parker Fuel Co., of Columbus, Ohio, has filed papers with the secretary of state increasing its capital stock from $30,300 to $50,300.

Pittsburgh, Penn.—The Youghiogheny-Pittsburgh Coal Co. has filed notice of an increase from $695,000 to $700,000 in its capital stock, and the creation of a debt of $900,000.

Louisville, Ky.—The East Kentucky Mining Co. has been organized in Louisville by Ben Leahy, Allen McNally, J. H. Bickel, Jr., J. W. Barker and W. H. Soper. The capital stock of the company is $20,000, and its debt limit $30,000.

Louisville, Ky.—The Virginia Coal Co., with a capital stock of $10,000, was recently organized by C. N. Boone, F. A. Hildebrand and L. J. Bergenroth. The company proposes to acquire coal lands in the eastern Kentucky field and will probably open an operation.

Charleston, W. Va.—An application has been filed with the Secretary of State for changing the charter of the Cabin Creek Consolidated Coal Co. This application, which affects a company with a paid-in capital of $1,200,000, has been granted, and the charter modified.

Indianapolis, Ind.—The Chicago-Carlisle Coal Co., of Carlisle, has been organized with a capital stock of $100,000. The purpose of the new incorporation is to own and operate coal mines. The directors are George A. Van Dyke, Webster A. Patterson, and Robert J. Frank, all of Chicago.

INDUSTRIAL NEWS

Wilkes-Barre, Penn.—The Lehigh & Wilkes-Barre Coal Co. will add to the equipment of its mines soon three 8-ton and two 10-ton General Electric mining locomotives.

Connellsville, Penn.—The Indiana County Coal Co., of Indiana, Penn., has sold to the Tide Coal Co., 327 acres of coal in Center Township, Indiana County, for a consideration of $18,320.

Birmingham, Ala.—The Gold Creek Coal Co. recently filed a petition in voluntary bankruptcy. The assets of the company are named at $35,000, while the liabilities are said to amount to $22,500.

Pottsville, Penn.—The Philadelphia & Reading Coal & Iron Co. will shortly install another 4-ton electric storage battery mining locomotive recently ordered from the General Electric Co., in its Glendower colliery.

Piedmont, W. Va.—The Abrams Creek Coal & Coke Co. will shortly place in operation in its mines the 3.5-ton 42-in. gage General Electric Co. storage battery mining locomotive and charging panel recetly ordered.

Whitesburg, Ky.—The Litts Coal Co., with headquarters at Coeburn, Va., is making arrangements for the development of a 5000-acre coal tract on Carr's Fork. Several million dollars will be expended in the development work.

Duluth, Minn.—The Berwind Fuel Co. will soon add to the electric equipment of its plant at Duluth Dock four 750-kv.-a. water-cooled transformers, switchboard and accessories. This apparatus will be furnished by the General Electric Co.

New Orleans, La.—Much of the coal lost in the wreck at Island No. 30 will be saved. Steam shovels are being used to take the coal out of the shallow water, where the barges went on the sand bar. The barges themselves will be a total loss.

Connellsville, Penn.—John D. McBride and wife have deeded to W. McK. Reed, of Pittsburgh, 157 acres of coal in the River seam of Pittsburgh coal, lying in North Strabane Township, Washington County, Penn., for a consideration of $64,646.

Ironton, Ohio—The operating offices of the Hess Dustless Mining Machine Co. have been removed from Amstead, W. Va., to Ironton. The machines have been made by the Ironton Engine Co. for the past 8 months. They are electrically driven and are said to be dustless.

Cleveland, Ohio—Captain Richardson, a Cleveland ship owner, has placed an order with the American Ship Building Co. for a 9000-ton steel freighter to replace the steamer "Howard M. Hanna, Jr.," wrecked in the recent storm. The boat is to be completed by the spring of 1914.

Washington, D. C.—The United States Government will prosecute labor leaders connected with the Western Federation of Miners accused of violating the Sherman anti-trust act in their activities. The stand has been taken that there is nothing in the sundry civil bill which prohibits such prosecution.

Philadelphia, Penn.—The Nelson Valve Co., of Chestnut Hill, Philadelphia, announces that it has recently taken over the manufacture and sale of the Erwood swing gate valve, formerly made by Messrs. Walch & Wyeth, of Chicago. In the future these valves will be known as the Nelson-Erwood swing gate valves.

Washington, Penn.—Daniel M. Thompson, of Deer Lick, Green County, has sold his undivided interest in a tract of land near Deer Lick to J. S. Patterson, of Waynesburg, for $260 per acre. J. G. Loughman, who for several years held an interest in the same tract of land, has also disposed of his interest to Mr. Patterson at the same price.

Birmingham, Ala.—The Little River Mining Co. has been incorporated at Gadsden, Ala., and proposes to develop about 7500 acres of coal land in the northern part of the state. The capital stock is placed at $4000, and the officers are W. T. Underwood, president; C. F. Manley, vice-president and treasurer, and Hugh White, secretary, all of Birmingham.

Cleveland, Ohio—The operation of a municipal mine may be undertaken by this city in an effort to reduce fuel bills now paid for city, county and school institutions. The city council gave this proposition serious consideration when it requested the bureau of information and complaints to compile figures showing the amount expended annually for fuel.

Columbus, Ohio—Coal operators in eastern Ohio and Pomeroy Bend districts are much interested in the recommendation of the United States Army Engineers, for a $9,000,000 appropriation for the improvement of the Ohio River. In case the appropriation is included in the Rivers and Harbors Bill it will mean a continuation of the past policy to furnish a stage of 9 ft. at all times in the Ohio River.

Birmingham, Ala.—The Sloss Sheffield Steel & Iron Co. announces that the battery of bee-hive coke ovens at its City Furnace, in the heart of Birmingham would be dismantled on the first of the year. These ovens were built in 1881, and have been in continual service since then, but recently the Sloss company agreed to remove the ovens in order to abate the smoke nuisance. It will be the passing of an old land mark.

Thomas, W. Va.—The Davis Coal & Coke Co. will shortly install additional electrical equipment in its power station consisting of two 300-kw. rotary converters; three 50-kv.a., three 75-kv.-a., six 110-kv.-a. and three 400 kv.-a. transformers, and switchboard apparatus. The additions to the mining equipment include three 6-ton and two 10-ton electric mining locomotives. All this apparatus will be supplied by the General Electric Co.

Birmingham, Ala.—The Alabama Railroad Commission recently issued an order reducing the rate on coal between Birmingham and Selma, from $1 per ton to 80c. per ton. The fight for a lower rate has been a lengthy one, and the first order issued by the commission was against the city of Selma. The latter, however, secured a second hearing, and the petition was granted. It is believed that the reduction in coal rates will prove of great benefit to the Selma manufacturing interests.

Indio, Ala.—The De Soto Coal Mining & Developing Co. has been placed in bankruptcy, the petitioners claiming that the company owes over $30,000 in debts. R. A. Porter, a Birmingham wholesale grocer, and A. J. Reilly, of Inland, Ala., a coal operator, have been named as referees. It was reported several weeks ago that this property had been sold to R. C. Middleton, of Birmingham, but the bankruptcy papers were against the De Soto company, of which B. C. Stevens, of St. Louis, is president.

Mobile, Ala.—O. F. Files, manager of the Alabama & New Orleans Transportation Co., has announced that the report recently published to the effect that the barge line operating on the Warrior River, would not supply coal from the Warrior district to Mobile, was in error, and that the company would supply Mobile, as well as New Orleans. This will give Mobile the benefits of the water rate from Birmingham. Barges are now being operated on regular schedule from Tuscaloosa to Mobile and New Orleans.

Columbus, Ohio—The joint legislative committee named to investigate the feasibility of the Ohio canal system has reported to Governor Cox. The committee takes a middle course and does not recommend the operation of the canals at present, but on the other hand does not favor the selling of the lands at this time. The report recommends enlisting the aid of the Federal Government in an attempt to establish cross-state water-way systems between the Ohio River and the Great Lakes. The committee deplores the policy followed in the past of selling canal lands piece-meal.

Birmingham, Ala.—Of paramount interest to the coal operators of the Birmingham district is the contract of the New Orleans Ry. & Light Co., calling for approximately 170,000 tons of steam coal and 25,000 tons of coke yearly. While this contract is not an especially desirable one, due to the fact that it calls for penalties on moisture, ash, sulphur, and heat content, and does not provide a bonus for superior coal, yet with the market in its present quiet condition practically all of the large operators have sent their representatives to New Orleans to make their bids upon this contract.

COAL TRADE REVIEWS

GENERAL REVIEW

Anthracite dull. Pressure on stove coal has swung to chestnut. Bituminous developing a strong undertone, while superficially dull. Prices moderately firm in spite of pessimistic reports at all points. Situation hinging on weather conditions.

While the recent cold snap had a stimulating effect upon the retail end of the hard-coal business, the low temperatures were not of sufficient duration to affect the wholesale market, and the trade has again relapsed into a waiting attitude. The market is dull and operators are depending entirely on business already placed. Contract renewals are attracting some interest and indications point to an increase over last year's quotations. An interesting development in the anthracite trade has been the reduced pressure for stove coal; producers apparently conserved their supplies of this grade too rigidly, when indications pointed to an acute shortage, with the result that much of this natural consumption has been covered by chestnut and this is now in the shortest supply.

While keen disappointment is being expressed on every hand at the dull situation in bituminous, close observers of conditions are inclining to the belief that the position of the market is highly favorable, considering the adverse weather and curtailment in general industrial manufacturing. Inquiries for large tonnages will usually develop a high price, indicating that the dullness is confined more particularly to the smaller concerns and is therefore of a more or less superficial character. On the other hand it is obvious that business is not nearly so active as might really be expected at this time. There is a more abundant supply of coal while some of the larger consumers are cutting down on their contracts and an occasional instance of forced selling is reported where the market has been overshipped.

A stiffening tendency is noticeable in the Pittsburgh market, due to increased domestic business, as the result of the colder weather; however, manufacturing is light and there has been considerable falling off in consumption, with the end not yet in sight. The recent cold weather checked the rapidly declining market in Ohio and temporarily prevented what promised to develope into a complete demoralization. Considerable difficulty is being experienced in the northern part of the state due to a severe congestion on the railroads. Unsteadiness is the rule, some companies showing a tendency to cut the circular in order to force business. There is still some surplus coal on hand at Hampton Roads, but prices are being firmly maintained and indications are that this excess tonnage will soon be moved. Domestic business in the South picked up sharply as a result of the freezing temperatures.

Notwithstanding the dull situation, prices in the Middle West are being held remarkably firm. Some cutting, on the part of small operators, in order to stimulate business, is noted, while prices generally are being hammered severely. Curtailment in iron and steel manufacturing plants is having an adverse effect on the steel market, while the weather is not cold enough to bring the domestic consumption up to normal.

EASTERN MARKET

BOSTON, MASS.

Bituminous market generally listless. Spot inquiry somewhat improved, and a slight increase in offshore and government requirements. Contract demand still inactive particularly for New River and Pocahontas. Anthracite softer, due chiefly to continued warm weather with a lack of stove coal still noticeable.

Bituminous—There is but little change in the market over that of last week. At Hampton Roads there is considerable coal standing, Newport News and Sewall's Point being the sufferers in this respect. At the Norfolk & Western piers movement is prompt, chiefly owing to an increase in the foreign bunker demand. The Hampton Roads f.o.b. circular price of $2.85 is still well maintained. Offshore and government requirements, although still limited, have slightly increased. Pennsylvanias continue weak, owing to the abundant supply of the Southern coals, and their prices are from $1 to $1.65, f.o.b. mines, according to grades. Contract demand is inactive and tide-water and all-rail requirements are light. Georges Creek continues to move regularly on contract with a slightly increasing demand for any surplus of this grade. Marine market remains unchanged, coastwise chartering being still weak. Rates from Hampton Roads to Boston are 70@75c. per ton.

Quotations are about as follows:

	Clearfields	Cambrias Somersets	Georges Creek	Pocahontas New River
Mines*	$1.00@1.55	$1.25@1.60	$1.67@1.77	
Philadelphia*	2.25@2.75	2.50@2.85	2.92@3.02	
New York*	2.55@3.05	2.80@3.15	3.22@3.32	
Baltimore*			2.85@2.95	
Hampton Roads*				$2.85@2.90
Boston†				3.72@3.82
Providence†				3.72@3.87

*F.o.b. †On cars.

Anthracite—The market is softer, owing to the past week's warm weather and to the decrease in the Western demand. The lack of stove coal is still the most important feature here.

NEW YORK

Superficial softness in bituminous that will soon be eliminated when colder weather appears. Consumers well stocked. Hard coal dull with operators depending entirely on contracts. Stove coal relatively easy and chestnut becoming tight.

Bituminous—The weather continues adverse to a large consumption of coal, and the trade is still quiet. A great many reports of an acute softness are heard, but the tendency is to exaggerate in that direction. Close observers of market conditions are generally agreed that the softness is more of a superficial nature, and that the trade has an excellent, though possibly not generally apparent, foundation. As a rule, reports of a weak market are confined mostly to the smaller companies, not equipped with an adequate selling organization; the larger operators are doing a big business, and the tonnage movement is steady.

Stocks on the hands of the consumers are generally conceded to be large, but this fact loses its significance in view of the fact that they are taking pains to prevent their supplies from being reduced. This is due to the anticipation of possible severe weather, which, in view of the present condition of the market, would probably result in an acute situation.

No important tonnages are reported on demurrage, and there seems to be only the normal amount of consignment coal at tide. The docks at South Amboy were reported choked up with coal, but this proved to be due to inadequate handling facilities. Production in the mining district is reported generally at full rated capacity, some companies even establishing new high records. We quote the New York market unchanged from last week as follows:

West Virginia steam, $2.60@2.75; fair grades of Pennsylvania, $2.70@2.80; good grades of Pennsylvania, $2.80@2.90; best Miller Pennsylvania, $3.10@3.20; George's Creek, $3.15@3.25.

Anthracite—There is a total absence of snap to the hard-coal market. Things are abnormally quiet, and operators are depending entirely on orders they already have on hand. Line business is closing down, outlying dealers who had placed orders for a certain number of cars weekly, having reduced this number by half or requested a complete cessation of shipments for the time being. It is entirely a weather market. However, it is noted that the mines continue working at full capacity, there being plenty of cars and labor, while petty strikes in the mining regions seem to be at a minimum for the time being.

The principal development in anthracite during the week has been quite a perceptible easing up in the pressure for stove coal. Such a severe shortage of this grade was anticipated that operators conserved their supplies in every way possible; this resulted in diverting a great deal of the demand to other sizes, with the result that a surplus of stove coal has developed. Egg coal is dull, broken well taken care of, while chestnut is the strongest of any of the prepared sizes,

although none of these can be described as strong at the moment. In the steam sizes, pea is easy, while all the buckwheats are more or less active.

We quote the New York market on the following basis:

	Upper Ports		Lower Ports	
	Circular	Individual	Circular	Individual
Broken	$5.00	.....	$5.05	
Egg	5.25	$4.95@5.25	5.30	$4.75@5.20
Stove	5.25	5.25	5.30	5.20
Chestnut	5.50	5.40@5.50	5.55	5.35@5.45
Pea	3.50	3.40@3.50	3.50	3.35@3.45
Buckwheat	2.75	2.65@2.75	2.45@2.70	2.25@2.75
Rice	2.25	2.25	1.95@2.20	1.80@2.20
Barley	1.75	1.60@1.75	1.70	1.40@1.70

PHILADELPHIA, PENN.

Weather conditions still a controlling factor in the anthracite market. Prospect of limited mining, provided there is no immediate improvement. Bituminous conditions about on a par with anthracite, with prices weakening.

Unfortunately for the anthracite business, the weather prevailing during last week did not hold out, and there has been little need for coal. The activity manifested by the retailers, while to a certain extent passed on to the operating companies, was in the main short lived, and the trade has again resolved itself into a waiting attitude. Retailers report a fair business for stove, chestnut and pea coal, but egg is anything but popular, judging from the small number of inquiries and purchases. It is apparently impossible to dispose of egg coal at the so called circular price, and many of the individuals are forcing the market by making concessions. Even pea coal is not moving off as rapidly as it should at this season.

The renewal of contracts for the coming year is now occupying the attention of many of the operators. It is understood that some of the sizes are likely to show an advance over the figures quoted for last year. Broken coal consumption has, during the past few years, increased to a great extent, and it would not be surprising if an additional 25c. per ton, not including the state tax, is added to the figure ruling during the present year. It is understood, however, that the contract price of pea, buckwheat and rice is likely to remain the same, plus the state tax, of course. One hears of cases where strenuous objections are registered, to its imposition, but in the majority of these, sufficient arguments are brought to bear to make the purchaser see the matter in the proper light. Irrespective of the legality of the measure, which the courts have not as yet decided, the fact remains that the state will insist upon its collection until directed otherwise, and there is nothing for the producer to do but pass it on to the consumer.

Prices for line as well as tidewater remain about the same as last week, with the exception of a further tendency to weakness on the part of egg coal, by the individual operators.

One still hears unfavorable reports regarding conditions in the bituminous market. The shipments from tidewater have fallen off considerably, and the line business to local points is almost entirely confined to contracts, and unless prompt shipments are made, cancellations are quite frequently in order.

BALTIMORE, MD.

Pessimistic feeling pervades the trade. Business expected at this time is not being done. A number of contract cancellations. Export trade brisk, and the best feature in the situation.

There is keen disappointment in the local coal trade because business is so flat. Not a few of the coal men here have had a number of their best customers cut down on their contracts. This is now touching a number of lines of business, and most of the industries concerned seem doubtful as to just when they may expect a resumption of really active trade.

With an easy car supply in both West Virginia and Pennsylvania the mine interests have been prepared to ship much larger quantities of coal than are required. The result has been forced selling in many cases which has, of course, meant cheap coal. West Virginia products have been selling at anywhere from 80 to 90c., while the less desirable Pennsylvania coals have been commanding around 90c. generally, with best grades being held fairly firm for any considerable quantities at $1.35.

The export trade is quite brisk just now, however, and several important loadings were made at the Curtis Bay and Port Covington piers the past week. Prospects in this trade for some weeks to come are said to be excellent.

Dealers in anthracite have been doing a fairly brisk business in domestic sizes. These are for the most part in easy call. Steam coals are in only fair demand. Anthracite as a whole is in much better condition, at the moment, than soft coal.

CENTRAL STATES

PITTSBURGH, PENN.

Better demand on account of colder weather, resulting in less price cutting. Operations continue at about 60%. Connellsville coke quiet with price prospect somewhat uncertain. Production and shipments decreased.

Bituminous—The coal market has been considerably stronger the past week, due to the colder and more seasonable weather. There has been an excellnt run of rush ordrs, individually small, on account of weather conditions. Manufacturing demand continues relatively light, and, if anything, has decreased in the past week, though to no material extent. On the whole the trend has been toward a stiffening in prices through the elimination of most of the cutting from list figures, but it remains the case that the quotable market is not above the regular season basis, the advance of last October being entirely forgotten. Mine operations continue at the reduced rate inaugurated when the lake-shipping season closed, about 60% of full capacity. Labor and cars are in good supply. We quote, with occasional shading: Slack, 90c.; nut and slack, $1.05; nut, $1.25; mine-run, $1.30; ¾-in., $1.40; 1½-in. steam, $1.50; 1¼-in. domestic, $1.55, per ton at mine, Pittsburgh district.

Connellsville Coke—The Producers' Coke Co. has definitely stated to consumers that it will not depart from its regular asking price for furnace coke on 1914 contracts, $2. In some quarters it is intimated that this does not preclude it from selling prompt of December at lower prices, but there are no definite reports of its having done so. It represents about one-third of the total merchant capacity. Among the outsiders there are several whose output is partly taken up by long-term contracts in force, and thus there is a distinct possibility that the $2 price will eventually obtain. This deters outside operators from selling at deep cuts from $2, and while quotations have been named as low as $1.85 or $1.90, they are far from general. Prompt coke, on the other hand, is easily obtained at $1.75. The market has been quiet as to transactions and negotiations for contracts are neither numerous nor eagerly prosecuted. Production is at about 75% of capacity, in the Connellsville regions, and is thus making a better showing than pig-iron production, indicating that Connellsville is probably supplying a slightly larger proportion of the total coke consumed than was the case early in the year. We quote: Prompt furnace, $1.75; contract furnace, $1.85@2; prompt foundry, $2.50@2.75; contract foundry, $2.50@2.75, per ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended Dec. 6 at 321,927 tons, a decrease of 22,181 tons, and shipments at 321,631 tons, a decrease of 35,154 tons.

BUFFALO, N. Y.

Still a very slack coal market. The touch of winter was too brief to affect the trade for the better. Bituminous grows weaker and anthracite is in light demand for the time of year.

Bituminous—There is no added firmness to the market. In fact it appears that the demand is lighter every succeeding week, with consequent lower prices. While it is a fact that some of the better-known shippers are still getting some orders at old prices the bulk of the business has to be done at more or less of a reduction. For this reason it is hard to give any price. Shippers try to hold to full quotations and sometimes insist on former prices as a possible help to that end, but jobbers and salesmen, being usually bears in the trade, insist on much reduced quotations. The worst of it all is that there is so little demand. As a rule the seller is unable to turn over a car in case he is left with one on hands, for consumers as a rule have already taken all that they can store. A considerable falling off in consumption is evident and the prospect is that this decrease is not yet at an end.

Quotations are therefore weak on the basis of $2.80 for Pittsburgh lump, $2.70 for three-quarter, $2.55 for mine-run and $2.15 for slack, with Allegheny Valley coal about 25c. lower.

Coke—The long period of sagging in the coke market is not at an end. With the production of pig iron light and not increasing there can be no stiffening in coke. Members of the trade who formerly reported full prices now incline to a reduction, as though they saw no immediate hope of a recovery of the old firmness. Quotations are on a basis of $4.60 for 72-hr. Connellsville foundry, with demand light.

Anthracite—The two or three days of winter weather about Dec. 10 had some steadying influence on the market and if it had continued the demand would have been good in a short time, but such was not the case and the trade is again dull.

Anthracite shipments by lake for the week were 25,300 tons, which gives a total of 93,100 tons for December, a large amount, with one company still taking tonnage and making no statement as to future proceedings. The 5,000,000-ton mark has already been passed, for the season's water trade.

TOLEDO, OHIO

Local railroad yards badly congested, the P. R.R. alone having over 2400 cars it is unable to move. As a result empties are in short supply. Mines curtailing production and circular fairly well maintained, in spite of adverse conditions.

The past week has been full of developments on the local-coal market. Heretofore the car situation has not been bad but during the week a decidedly serious condition has developed and the Toledo yards are badly congested. The Pennsylvania railroad alone has more than 2400 cars of coal ready for connecting lines which are unable to accept them. The roads have been unable to move cars so that hundreds of empties lined up on switches and in yards in this vicinity are not available for use. Lack of sufficient motive power on the part of railroads has been given as a reason for the trouble by some while others claim that the replacement of wooden cars by steel cars has something to do with the situation as not so many new cars are provided as were formerly in commission. In any event the congestion is real as is also the fact that there are plenty of empties unavailable for use.

In consequence of this condition and the slump occasioned by the cessation of navigation, mines are curtailing their output and coal is not being generally forced on the Toledo market to the detriment of prices. Quotations are holding fairly close to the list although there is some cutting, confined largely to track coal and such coal as has been left on the docks after the close of navigation. There is more fuel on the local docks than was at first supposed would be the case, due to the fact that boats were greatly delayed, owing to the recent storm and also to the expiration of all insurance since all the harbor lights are out.

Domestic coal is slow, owing to the warm weather for the past month, a condition wholly unexpected and unusual in this section. The slump in steam coal has not been as marked as had been feared and the operators have shown the good judgment to curtail production. A little cold weather will put the Toledo market in good shape and the only threatening situation lies in the congestion of the railroads.

COLUMBUS, OHIO

Declining market checked by a few days of colder weather which stimulated domestic trade. Prices still weak, however, and there is no immediate hope of an advance. Decrease in steam tonnage reported.

The few cold days of last week was a boon to the coal trade although the effects were only temporary. The rapidly declining market was arrested for a time and prices have not yet reached the stage of demoralization. The levels which prevail, however, are considerably lower than those of the past month. Unsteadiness characterizes the trade and the smaller operators are cutting quotations in order to force business.

The greatest improvement was seen in domestic lines. A few dealers which had rather low stocks placed orders for Hocking lump and the fancy grades. But orders have been few and far between because retailers stocks are unusually large for the time of the year. Dealers are not disposed to order more at this time and take their chances on paying demurrage.

Every mining district in the state is well supplied with cars. In the Hocking Valley the output for the week is estimated at 90% of normal and the same is true of the Pomeroy Bend field. In the domestic fields the output has been large and in Eastern Ohio the production has been about 85% of the average. There is some slowness shown in steam business in every part of the country. Few if any of the larger steam users are disposed to stock up for emergencies but some railroads are stocking although their daily requirements are not as large as formerly.

Retail trade is rather slow as might be expected under existing weather conditions. Dealers are unable to keep their teams busy and trade is the dullest in years for the time of the season.

Quotations in the Ohio fields are as follows:

	Hocking	Pittsburgh	Pomeroy	Kanawha
Domestic lump	$2.00 @ 1.85	.....	$2.25 @ 2.15	$1.75 @ 1.65
3-4 inch	1.80 @ 1.70	$1.30 @ 1.20	2.00 @ 1.90	1.50 @ 1.44
Nut	1.30 @ 1.20	.....	1.55 @ 1.50	1.30 @ 1.25
Mine-run	1.35 @ 1.30	1.15 @ 1.10	1.30 @ 1.25	1.35 @ 1.25
Nut, pea and slack	0.85 @ 0.80	.....	0.95 @ 0.90	0.80 @ 0.75
Coarse slack	0.75 @ 0.70	0.95 @ 0.85	0.85 @ 0.80	0.70 @ 0.65

DETROIT, MICH.

Cancellations of orders becoming the rule. Market entirely a weather proposition. Indications point to a possible serious collapse.

Bituminous—The summer-like weather has improved transportation facilities, and there are now large numbers of cars standing on track on demurrage. Domestic trade is demoralized, and heavy cancellations on the part of the dealers has been the rule. Salesmen have again been put on the road in hopes of picking some stray orders that are still hanging fire. The market is entirely at the mercy of the weather. Stocks in all the adjoining territory are adequate, and cancellations are becoming the rule, rather than the exception.

Hocking, lump, egg and nut, have sold as low as 75c. per ton in some cases, and there are rumors that it has even been offered free for the accrued freight and demurrage charges. Steam business has showed a tendency to act in sympathy with domestic, and there has also been a curtailment in this grade. With a full car supply permitting maximum shipments and conditions continuing as adverse as they are, the coal trade is in serious danger of experiencing a total collapse.

The market is now quotable on the following basis:

	W. Va. Splint	Gas	Hocking	Cambridge	No. 8 Ohio	Pocahontas	Jackson Hill
Domestic lump	$1.25	....	$1.25	....	....	$2.00	$1.75
Egg	1.25	....	1.25	....	....	2.00	1.75
Nut	1.20	....	1.10	....	....	....	....
Steam lump	1.15	....	....	....	....	....	....
3-in. lump	1.05	$1.10	1.00	$1.10	$1.10	....	....
Mine-run	.90	1.00	1.00	1.10	1.10	....	....
Slack	0.75	0.80	0.65	0.60	0.60	....	....

Anthracite—Stove and egg coal continue scarce, but the demand is light and not a large quantity is needed. A premium of 50c. per ton is being asked on stove coal, and 25c. per ton on pea.

Coke—Connellsville is in absolutely no demand, foundry grades being quoted at $1.65, Solvay, $2.90, and gashouse $2.75 f.o.b. oven.

HAMPTON ROADS

Fair accumulation of coal at tidewater. Demand not so heavy. Some movement of high volatile to the New England market.

Tidewater tonnage for the week has been good although not as heavy as was expected. Even with the large amount of coal dumped there is still a fair accumulation in the various railroad yards. The greater part of the surplus fuel is being held for large government colliers although there is some free coal but suppliers having such are not cutting prices and it is probable that within a few days all surplus coal will be disposed of as considerable inquiries are being received from the New England market for large cargoes.

In addition to heavy shipments of New River and Pocahontas to New England during the week there have been several small cargoes of high volatile moving to the same market.

Continued cold weather for the last ten days has caused a somewhat better demand for anthracite coal and some of the dealers have advanced the price to $8 per ton.

LOUISVILLE, KY.

Colder weather and outlook more encouraging. Quotations improved but not yet fully recovered from slump. Production somewhat restricted.

With a week of something resembling winter weather, coal operators and dealers are somewhat encouraged, although the imminent danger of a return of mild weather has caused some nervousness. The demand has been much improved, although not as greatly as was expected. If it continues, however, as there seems no reason to doubt it will, business should improve to a marked degree. This probability of an increased demand has helped the steam market.

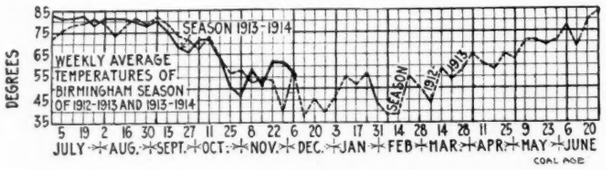
The miners are beginning to lay off for the holidays, and with something of a car shortage, there are few operations going at more than half capacity. Even without cold weather, this would naturally have the effect of strengthening the market, but if seasonable December weather is had during the next two weeks, there will very probably be a heavy demand, and an inadequate supply. Prices have not yet fully recovered from the slump caused by the prolonged period of warm weather. Sales of high-grade Eastern Kentucky block to Northern jobbers have been made at as low as $1.85 f.o.b. mines, although $2@2.15 is the more general range of prices, and even these will not continue long. Nut and slack are selling at 75@80c. Western Kentucky block is in fair demand at $1.25@1.35, while nut and slack is worth 65 to 75c., and pea and slack, which was recently a drug on the market at such prices as 10 and 15c., is stronger at 25 cents.

SOUTHERN AND MIDDLEWESTERN

BIRMINGHAM, ALA.

Coal and coke quiet. Blacksmith coal fair. Pig iron in small demand. Car shortage still prevails.

Absolute stagnation seems to be the condition of the coal business this past week, both on steam and domestic grades, and while prices are holding up well, there is only a small tonnage moving, outside of the regular contract business. Some operators are considering reducing their tonnage, preferring to do this rather than lower the price. Furnace coke is rather quiet, after a slight flurry about ten days ago, when several of the Western smelters placed orders for several thousand tons of furnace coke for shipment prior to Jan. 1, the rate to a number of the western states advancing to $2 a ton on that date. Foundry coke is being shipped only in small tonnage lots. Blacksmith coal seems to be fareing better than any other commodity, the demand being about normal.


DEGREES
SEASON 1913-1914
WEEKLY AVERAGE TEMPERATURES OF BIRMINGHAM SEASON OF 1912-1913 AND 1913-1914
SEASON 1912-1913
JULY AUG. SEPT. OCT. NOV. DEC. JAN FEB MAR APR. MAY JUNE
COAL AGE

Sales of pig iron for the past ten days have been in small lots from 40 to 200 tons, but the Birmingham manufacturers are still holding for $11 to $11.50 f.o.b. Birmingham. The heavy buying for next year has not yet started. Even with the small shipments of coal, the car supply is inadequate on several of the roads, though some of the lines are in fairly good shape.

NEW ORLEANS

Freezing temperatures bring avalanche of coal orders. Motor truck delivery found profitable and becoming general. Harbor facilities for coaling improved.

A sudden change from almost summer weather to freezing temperatures brought an avalanche of orders and city delivery systems have been taxed to the utmost during the week. As a consequence, several hundred thousand tons of coal were sold.

In order to facilitate coaling in the harbor, several new barges and derricks have been ordered. The lack of sufficient equipment of this kind oftentimes has resulted in delay when a number of boats called for coal at the same time. Cargo business is still at a standstill and in all probability forwardings of coal from Gulf ports will be lighter this winter than has been the case in many years.

Some improvement was noted last week in the Texas demand as well as in the number of orders from points in Louisiana and Mississippi. Keen competition is resulting in the efforts to land the yearly contract of the New Orleans Railway & Light Co.

INDIANAPOLIS

Some severe weather stimulated the retail trade but the mines received little benefit and are still working only about four days a week. Notwithstanding the dullness at the mines, prices hold firm. The teamsters' strike practically over.

Two or three days of what was thought to be the real start of winter weather helped the retail trade but before the increased demand could be reflected back to the mines, mild weather returned. December so far has not been much more favorable to the coal trade than November was. Operators and retailers are standing firm on prices, notwithstanding the fact that they would like to have business stimulated.

It is noticed there is considerable advertising of Indiana domestic grades in the metropolitan papers and operators say more of it is being used yearly, displacing Eastern bituminous coals. Operators are doing their best to impress the consumer that the best of the Indiana domestic grades compare favorably with the imported product.

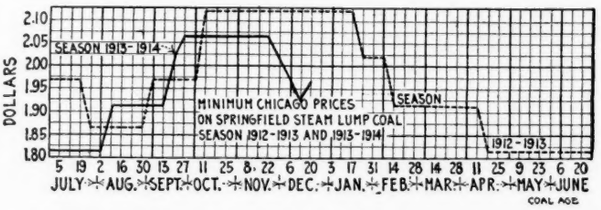
The teamsters' strike in this city, which for a time threatened to paralyze the coal trade, has been partly settled. The union has backed down on its demand for recognition and the teamsters are ready to go back, if the union schedule of wages is paid. About half the strikers are at work again but the larger employers are holding out firmly against the union button.

CHICAGO

Some recovery in the market, but continued warm weather makes the general situation soft. Smokeless lump and egg quotations remain the same, while prices for mine-run are being hammered badly. Anthracite and coke markets dull. Greater strength noted in prices for Franklin County coal.

While there has been some recovery from the depressed conditions of a week ago, the present situation is far from satisfactory. Continuation of spring-like weather is the chief cause. Practically all retailers have their yards filled to capacity and there is comparatively little demand. Many of them are taking advantage of the condition of the market, to seek lower prices.

A few dealers and small shippers have been cutting quotations on smokeless mine-run to the extent of 15c. a ton. Smokeless lump and egg prices remain about the same, the selling price, on a mine basis, ranging between $2 and $2.25. Operators in the Carterville district are pursuing the policy adopted some time ago of shutting down their mines whenever there is lack of business. As a result, prices have not weakened; domestic sizes vary between $1.60 and $1.85.


DOLLARS
SEASON 1913-1914
MINIMUM CHICAGO PRICES ON SPRINGFIELD STEAM LUMP COAL SEASON 1912-1913 AND 1913-1914
SEASON 1912-1913
JULY AUG. SEPT. OCT. NOV. DEC. JAN. FEB. MAR. APR. MAY JUNE
COAL AGE

Softness prevails in the anthracite market. Distributing agents with coal on track and up to car service are cutting prices as much as 25c. a ton. Dock interests are maintaining the circular . Shipments of Hocking coal to Chicago are small in volume and prices remain steady. Franklin County coal have recovered from its previous weakness, the quotation of $1.50, the mines, named a short time ago for lump and egg having been boosted to between $1.60 and $2. Springfield steam lump and mine-run are somewhat soft; domestic lump is selling at $1.50, the mines. Indiana operators are confining their shipments to the Chicago market to contract business. A comparatively few lots of domestic lump have been sold at from $1.50 to $1.65, the mines.

Lack of activity in the iron and steel market has resulted in a depression in the coke business. Prices remain about the same.

Prevailing prices at Chicago are:

	Springfield	Franklin Co.	Clinton	W. Va.
Domestic lump	$2.32	$2.65@3.05	$2.27	
Steam lump	1.96		1.97	
Egg		2.65@3.05		$4.20
Mine-run	1.87	2.40	1.87	3.45
Screenings	1.16	1.70	1.27	

Quotations on Harrisburg coal are: Domestic lump and egg, $2.65@3.90; steam lump, $2.35; mine-run, $2.35; screenings, $1.55; No. 1 nut, $2.65@3.90; No. 2 nut, $2.55.

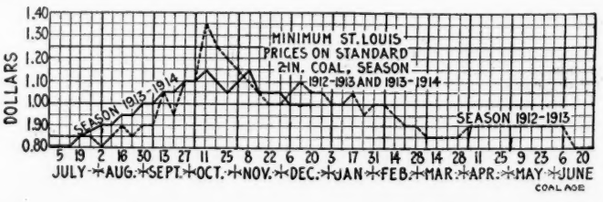
Carterville prices are: Lump, egg and No. 1 washed, $2.65 @3.90; No. 2 washed, $2.55.

Coke—Connellsville, $5.25@5.50; Wise County, $5@5.25; by-product, egg, stove and nut, $4.90@5; gas house, $4.75@4.95.

ST. LOUIS, MO.

Domestic market slow with no demand. Steam sizes showing an improving tendency. General business poor and outlook not encouraging.

There is no change in local conditions, with the exception that screenings are in better demand and seem to be bringing a fair price; if warm weather continues this condition will do likewise. Domestic demand has fallen off considerably, as the weather is not cold enough to bring about a normal consumption and the steam demand has slackened in the last week or ten days, due principally to the large iron and steel manufacturing plants shutting down for lack of business. This, of course, affects the steam market some and were the demand for smaller sizes normal, prices would be considerably better than they are.


DOLLARS
MINIMUM ST. LOUIS PRICES ON STANDARD 2 IN. COAL, SEASON 1912-1913 AND 1913-1914
SEASON 1913-1914
SEASON 1912-1913
JULY AUG. SEPT. OCT. NOV. DEC. JAN FEB. MAR. APR. MAY JUNE
COAL AGE

For the first time in several weeks there is no anthracite under demurrage on the east side; 18 cars that were under demurrage for a matter of two weeks were sold to a big retail company a few days ago for $6.65 at St. Louis, or $2.65 at the mines, for egg size. This is 60c. below the St. Louis circular.

The prevailing market is:

	Carterville and Franklin Co.	Big Muddy	Mt. Olive	Standard
2-in. lump	.....	.....	.....	$1.00*
3-in. lump	.....	.....	$1.40*	.....
6-in. lump	$1.30 @ 1.50	$2.25	1.50*	1.20*
Lump and egg	1.85 @ 2.15	.....	.....	.....
No. 1 nut	1.40 @ 1.60	.....	.....	.....
Screenings	0.40 @ 0.50	.....	.....	.....
Mine-run	1.10 @ 1.20	.....	.....	.....
No. 1 washed nut	1.75	$2.25	1.40	.....
No. 2 washed nut	1.35	.....	1.60	.....
No. 3 washed nut	1.15	.....	.....	.....
No. 4 washed nut	1.05	.....	.....	.....
No. 5 washed nut	0.50	.....	.....	.....

* Asking price.

KANSAS CITY, MO.

Market dull with little or no business being negotiated. Quotations holding remarkably firm in view of the adverse conditions.

Though the weather is more satisfactory in Kansas City, it has failed to improve the situation greatly. However, there is a snap in the atmosphere which augurs well and operators are more optimistic over conditions. More coal is being burned in all quarters, and dealers' stocks are being reduced quickly enough to promise well for the future. The wholesalers have not yet been affected, however, and will not be for some time, unless a real cold wave makes its appearance.

The market is steady, operators realizing that the lethargy afflicting the business is due merely to the unseasonable weather. It is believed that a lowering of prices would have no material effect on the movement, and prospects are for a stationary market until colder weather appears.

OGDEN, UTAH

Lower temperature in some localities helps to move coal. Mines working hard to keep from accumulating nut. Storm on eastern slope of mountains will stimulate Kansas and Nebraska market. Quotations remain unchanged.

A few localities in the Rocky Mountain district were recently visited by a storm which will have a tendency to create a greater demand for coal. However, conditions as a whole have not improved greatly and while all mines are working at capacity, they are in doubt as to whether or not they can continue unless there is a decided change in the near future.

Nut coal still continues to be a source of much trouble and while the mines are moving this grade, there are times when it seems there will be a surplus. This condition has effected the price somewhat and quotations are weak. Lump and slack coal are moving through to destination rapidly and all districts are being well supplied.

Quotations have not changed and are as follows:

	California	Colo. & Neb.	General
Lump	$3.00@3.50	$3.25	$2.75
Nut	2.50@3.00	2.50	2.25
Mine-run	1.85	1.85	1.85
Slack	1.00	1.00	1.00

FOREIGN MARKETS

GREAT BRITAIN

Dec. 5—Owing to a strike of railwaymen on the Great Western system, many collieries are idle; the ports principally affected are Swansea and Port Talbot. The general feeling is that a settlement will be come to in the course of a day or two.

Cardiff coals are practically fully booked for December. There are many inquiries for the first quarter of next year, buyers' ideas being about $4.32 for seconds.

Quotations ae approximately:

Best Welsh steam	$5.04@5.16	Best Monmouthshires	$4.38@4.50
Best seconds	4.74@4.92	Seconds	4.08@4.20
Seconds	4.62@4.74	Best Cardiff smalls	2.64@2.76
Best dry coals	4.56@4.80	Seconds	2.40@2.52

The prices for Cardiff coal are f.o.b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f.o.b. Newport; both net, exclusive of wharfage, and for cash in 30 days.

PRODUCTION AND TRANSPORTATION STATISTICS

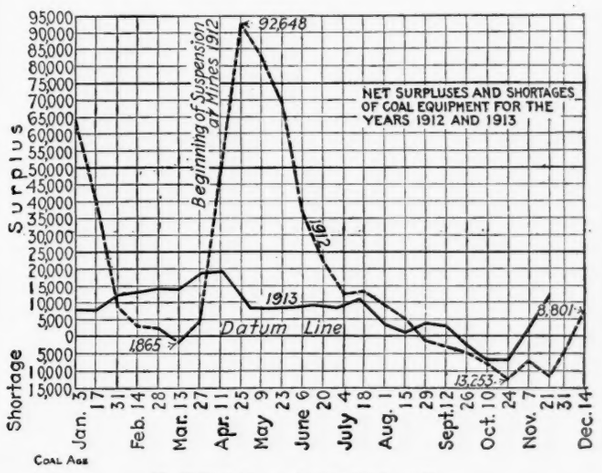
THE CAR SITUATION

American Ry. Association reports surpluses and shortages of coal equipment for two weeks ended Dec. 1, as follows:

	Surplus	Shortage	Net*
New England Lines	40	34	**6**
N. Y.; New Jersey, Del.; Maryland; Eastern Penn.	2,903	150	**2,753**
Ohio; Indiana; Michigan; Western Pennsylvania	1,884	994	**890**
West Virginia, Virginia, North & South Carolina	862	3,283	2,421
Kentucky, Tenn.; Miss.; Alabama, Georgia, Florida	2,123	576	**1,547**
Iowa, Illinois, Wis., Minn.; North & South Dakota	3,450	2	**3,448**
Montana, Wyoming, Nebraska	998	16	**982**
Kansas, Colorado, Missouri, Arkansas, Oklahoma	1,920	42	**1,878**
Texas, Louisiana, New Mexico	696	8	**688**
Oregon, Idaho, California, Arizona	2,745	16	**2,729**
Canadian Lines	0	0	0
Total	17,621	5,095	**12,526**

	Aug. 1	Aug. 15	Sept. 1	Sept. 15	Oct. 1	Oct. 15	Nov. 1	Nov. 15
Surplus	8,810	8,293	8,689	8,714	7,953	6,014	6,720	10,520
Shortage	4,029	7,038	5,209	7,731	10,393	12,502	12,595	8,477
Net*	**4,781**	**1,255**	**3,480**	**983**	2,440	6,488	5,875	**2,043**

***Bold face** type indicates a surplus.



NORFOLK & WESTERN R.R.

The following is a statement of tonnages shipped over this road from mines in West Virginia and the commercial and company coal, for the month of November, in short tons:

Field	Shipped	Tipple	Total	Commercial	Company
Pocahontas	1,174,885	16,769	1,191,654	1,141,615	94,187
Tug River	203,213	4,763	207,976	157,704	50,272
Thacker	250,701	10,204	260,905	169,453	91,452
Kenova	80,733	10,714	91,447	75,229	16,218
Clinch Valley	.....	.....	.....	146,582	12,018
Other N. & W.	.....	.....	.....	5,336	.....
Total N. & W. Fields				1,695,886	264,147
Williamson and Pond Crk. RR.	.....	.....	.....	55,002	11,763
All Othe Railroadsr	.....	.....	.....	157,540	.....
Grand Total	1,709,532	42,450	1,751,982	1,908,428	275,910

Total shipments of coke, entirely from the Pocahontas field amounted to 93,038 tons.

CHESAPEAKE & OHIO RY.

The following is a comparative statement of the coal and coke traffic from the New River, Kanawha and Kentucky districts for October and the four months ending Oct. 31, 1913, in short tons:

	October		4 Months			
Destination	1913	1912	1913	%	1912	%
Tidewater	38,780	287,078	1,058,046	17	1,214,311	22
East	229,018	197,350	781,628	13	751,702	13
West	993,183	872,485	3,939,842	63	3,491,474	63
Total	1,460,981	1,311,913	5,779,516		5,457,487	
Coke	33,035	25,060	119,383		87,176	
From connections						
Bituminous	109,091	50,767	427,821	7	106,457	2
Anthracite	1,645	1,440	6,464		4,232	
Total (except coke)	1,571,717	1,364,120	6,213,801	100	5,568,176	100

COAL MOVEMENT

The following is a summary of the movement of coal and coke over 13 principal railroads during September and the first nine months of this year in comparison to last year, in short tons:

	September		Nine Months	
Anthracite	1912	1913	1912	1913
Baltimore & Ohio[1]	131,977	126,919	1,082,970	1,060,724
Chesapeake & Ohio[1]	1,195	1,006	19,271	12,994
Erie[3]	693,569	749,687	5,441,365	6,489,298
Pennsylvania[1 3]	935,550	813,394	7,387,837	7,665,020
Virginia[2 1]	.....	50	20	859
Total 5 roads	1,762,291	1,691,056	13,931,463	15,228,895
Bituminous				
Baltimore & Ohio[1]	2,928,645	3,148,994	25,393,524	27,250,529
Buffalo, Roch. & P.[1 2]	688,595	851,501	6,014,853	7,052,765
Buffalo & Susq.[1 2]	132,796	132,667	1,088,929	1,339,193
Chesapeake & Ohio[1]	1,247,505	1,581,037	13,118,215	12,618,033
Erie[3]	21,126	12,726	205,461	306,466
Hunt. & Br'd T. Mt[1 2]	123,382	112,483	882,626	1,007,396
New York Central	773,608	815,989	5,853,759	6,769,567
Norfolk & Western[1 2]	1,928,537	2,109,476	17,109,092	17,939,257
Pennsylvania[1 3]	3,906,164	4,378,037	34,114,059	37,774,323
Pitts. & Lake Erie[1 2]	1,057,489	1,082,360	8,369,773	9,668,295
Pitts. Shaw. & North[1 2]	170,682	238,849	1,400,884	2,037,169
Virginia[1 2]	276,851	393,199	2,611,582	3,291,941
Western Maryland	232,204	237,663	2,114,791	2,210,556
Total 13 roads	13,487,584	15,094,981	118,277,548	129,265,490
Coke				
Baltimore & Ohio[1]	386,335	387,704	3,498,977	3,279,518
Buffalo, Roch. & P[1 2]	49,588	36,996	384,547	413,103
Buffalo & Susq.[1 2]	24,765	24,506	198,480	224,538
Chesapeake & Ohio[1]	20,058	29,680	188,027	266,886
New York Central	7,133		65,125	36,207
Norfolk & Western[1 2]	113,035	121,451	1,066,936	1,176,602
Pennsylvania[1 3]	1,073,613	1,127,951	9,671,343	10,859,413
Pitts. & Lake Erie[1 2]	501,936	525,931	4,584,097	5,182,891
Pitts. Shaw & North[1 2]			5,155	9,383
Western Maryland	6,020	5,991	51,638	59,223
Total 10 roads	2,182,483	2,260,210	19,714,325	21,507,767
Coal and Coke, 13 Roads				
January			16,421,839	18,936,646
February			17,787,331	17,546,496
March			19,483,025	17,631,345
April			13,429,367	16,850,690
May			15,635,568	18,986,796
June			16,702,153	18,580,363
July			16,635,448	18,704,710
August			18,396,247	19,718,856
September			17,432,358	19,046,247
October			18,712,657	.....
November			17,815,767	.....
December			17,929,632	.....
Total, 12 months			206,381,392	

[1] Includes coal from connecting lines.
[2] Includes company's coal.
[3] Does not include company's coal hauled free.

Note.—Southern Railway handled 366,464 short tons of coal during August and 2,776,062 short tons during the 9 months ending August.

ANTHRACITE SHIPMENTS

The November shipments of anthracite amounted to 5,786,931 tons, which is the lowest record for that month since the panic year of 1907, when shipments touched 5,743,522 tons. A decrease in shipments was naturally to be expected in view of the unseasonable weather and consequent lack of demand from the consuming interests. The movement for the year to Dec. 1 shows an increase of 5,740,934 tons over that for the same period last year, and with a heavy shipment this month it is possible for the hard coalers to break their previous high record for the year, 69,954,299 tons made in 1911.

The following is comparative statement of the anthracite shipments for November and the first eleven months, of the years 1912-13, in long tons:

	November		11 Months			
	1913	1912	1913	%	1912	%
Phila. & Reading	1,119,247	1,243,111	11,856,164	18.70	11,628,506	20.16
Lehigh Valley	1,114,014	1,177,732	11,948,792	18.84	10,682,836	18.53
Cent. R.R. N. J.	727,107	812,870	8,429,038	13.29	7,581,998	13.15
Del. Lack. & West.	810,921	889,560	9,064,157	14.30	8,214,645	14.24
Del. & Hudson	575,976	635,575	6,504,100	10.26	5,762,269	9.99
Pennsylvania	600,648	509,752	5,804,780	9.16	5,004,832	8.68
Erie	654,219	708,611	7,482,921	11.80	6,768,147	11.74
Ont. & Western	184,799	188,325	2,317,058	3.65	2,022,843	3.51
Total	5,786,931	6,165,536	63,407,010		57,666,076	

COAL FREIGHT DECISIONS

I. C. C. No. 5734—Huerfano Coal Co. vs. Colorado & Southeastern R.R.

1—Each carrier subject to the act is charged with the duty of furnishing cars for the transportation conducted over its line.

2—A carrier's obligation to furnish cars for shipments to points upon the lines of its connections is joint with the latter, and contracts with them can not relieve it of its portion of such joint liability.

3—Trackage contract between Colorado & Southeastern R.R. and Colorado & Southern Ry. found to cause an undue discrimination against petitioners in the matter of car supply.

COAL SECURITIES

The following table gives the range of various active coal securities and dividends announced during the week ending Dec. 13.

	Week's Range			Year's Range	
Stocks	High	Low	Last	High	Low
American Coal Products			80	87	80
American Coal Products Pref	...	...	105	109¼	102
Colorado Fuel & Iron	27⅜	26¾	26¾	41½	24½
Colorado Fuel & Iron Pref	....	....	155	155	150
Consolidation Coal of Maryland	....	....	102½	102½	102½
Lehigh Valley Coal Sales	190	175	175	....	....
Island Creek Coal Com	47	46	47	53½	47
Island Creek Coal Pref	83	81⅛	83	85	80
Pittsburgh Coal	20	19	19	24⅜	14½
Pittsburgh Coal Pref	89	87	87	95	73
Pond Creek	18½	17	17½	23⅜	16½
Reading	164½	161¼	162¼	171	151⅜
Reading 1st Pref	85	85	85	92½	82½
Reading 2nd Pref	87	86¾	86¾	95	84
Virginia Iron, Coal & Coke	40	40	40	54	37

	Closing		Week's Range		Year's	
Bonds	Bid	Asked	or Last Sale		Range	
Colo. F. & I. gen. s.f.g. 5s	90	93½	91½	Dec. '13	90	99½
Colo. F. & I. gen. 6s	102½	106½	107¼	June '12	..	..
Col. Ind. 1st & coll. 5s. gu	75	78	76	76	76	85
Cons. Ind. Coal Me. 1st 5s	76	79	76	Aug. '13	76	76
Cons. Coal 1st and ref. 5s	..	92	87	87	87	87
Gr. Riv. Coal & C. 1st g 6s	..	..	102¾	April '06	..	..
K. & H. C. & C. 1st s f g 5s	91	..	91	Oct. '13	91	98
Pocah. Con. Coll. 1st s f 5s	..	86½	86	Oct. '13	85	87½
St. L. Rky. Mt. & Pac. 1st 5s	75	77½	76	Dec. '13	73	80½
Tenn. Coal gen. 5s	97	Sale	97	97¼	97	103
Birm. Div. 1st consol. 6s	100½	101½	101	Nov. '13	100¾	103
Tenn. Div. 1st g 6s	101½	101½	100½	Oct. '13	99	102
Cah. C. M. Co. 1st g 6s	..	..	103	July '13	103	103
Utah Fuel 1st g 5s	..	..	..	.....	..	..
Victor Fuel 1st s f 5s	..	84	80	May '13	79½	80
Va. I. Coal & Coke 1st g 5s	92½	93	92½	92½	92	98

DIVIDENDS

Beech Creek R.R.—Regular guaranteed quarterly dividend of 1% payable Jan. 2 to holders of record Dec. 23.

Little Schuylkill Navigation R.R. & Coal Co.—Dividend of $1.25 payable Jan. 15, to holders of record Dec. 11 to Jan. 14.

St. Louis, Rocky Mountain & Pacific Co.—Regular quarterly No. 6 on the preferred stock of 1¼% payable Dec. 31 to holders of record Dec. 21 to Dec. 30.

Coal & Iron National Bank—Quarterly dividend of 1½% payable Jan. 2 to holders of record Dec. 10.

American Coal Products Co.—Regular quarterly on the common stock of 1¾% payable Jan. 2 to holders of record Dec. 25 to Jan. 2, and 1¾% on the preferred stock, payable Jan. 15 to holders of record Jan. 11.

✲

The Consolidation Coal Co.—The capital stock of this concern is $31,190,500, which includes $6,190,500 additional stock authorized in February of the current year, for the purpose of taking up some outstanding bonds. The company has now paid dividends for 26 years and since 1905 has maintained an annual disbursement of 6%.

Pittsburgh Coal Co.—Earnings of this company last year, which was the best since 1907, amounted to only $2,025,500, or less than 7½% on the preferred stock. In view of this showing it looks very doubtful if the $10,800,000 accrued back dividends on the 7% cumulative preferred stock will ever be paid.

The Lehigh Valley Coal Sales Co.—Together with the announcement of the 25% dividend by this company, it is stated that 25% additional stock will also be issued to which stockholders are permitted to subscribe in proportion to their holdings. The dividend, therefore, is really a stock dividend. The new stock will amount to $1,515,200, bringing the total outstanding capital stock up to $7,576,000.

Bond County Coal Co. (Illinois)—This company incorporated in Illinois with an issued capital stock of $200,000, does not propose operating on its Bond County properties, but will merely hold them in reserve for the future. The property has been well proved by diamond drilling; it is underlaid with the No. 6 Illinois seam which is clean and has a strong rock and slate roof and hard fire clay bottom. The thickness of the vein ranges from 6½ to 9 feet.